# Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOL. XIV. NEW YORK, OCTOBER 23, 1858. NO. 7.

THE
SCIENTIFIC AMERICAN,
PUBLISHED WEEKLY
At No. 128 Fulton street, (Sun Buildings,), New York,
BY MUNN & CO.

O. D. MUNN, S. H. WALES, A. E. BEACH.

Responsible Agents may also be found in all the principal cities and towns of the United States.

Sampson Low, Son & Co., the American Booksellers, 47 Ludgate Hill, London, Eng., are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

Single copies of the paper are on sale at the office of publication, and at all the periodical stores in this city Brooklyn and Jersey City.

TERMS—Two Dollars per annum.—One Dollar in advance, and the remainder in six months.

☞ See Prospectus on last page. No Traveling Agents employed.


### Hasheesh and its Smokers and Eaters.

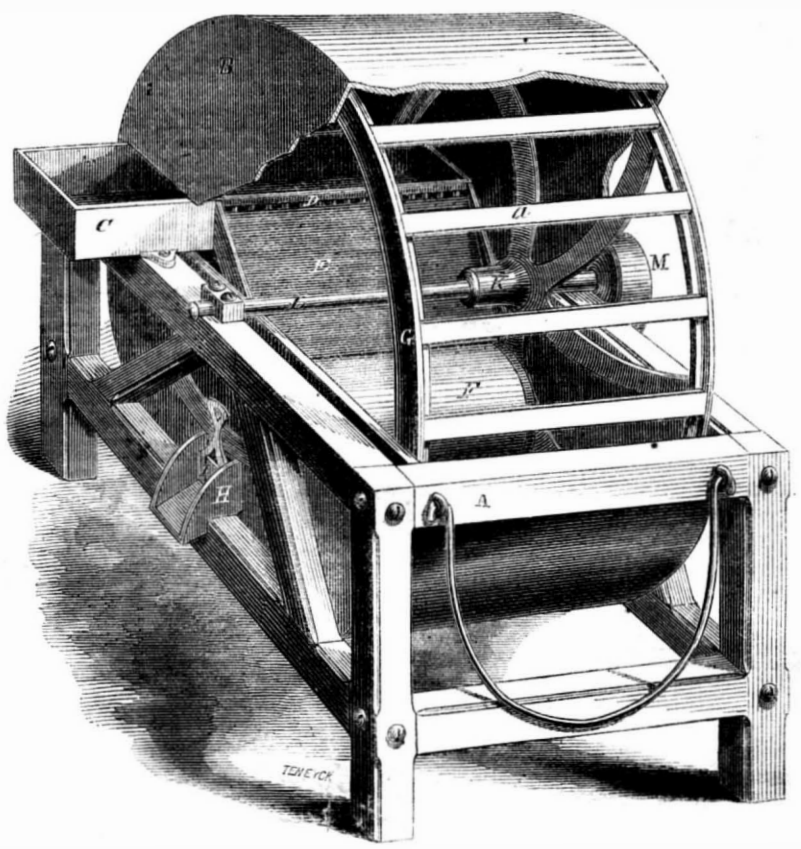
The drowsy appearance and indolent character of Eastern nations is not only due to the climate of the countries, and the almost spontaneous production by the earth of everything necessary for the life of man, thus in a great measure rendering labor unnecessary, but it is aided and increased by the use of powerful narcotic drugs. The Chinese have their opium which they chew and smoke to great excess, as it produces a delicious dreamy sensation that is relished by the inhabitants of that most conservative country. We have often seen the celestial cigar-sellers in this city looking with a bewildered stare at the passing crowds, as if the noise of our bustling traffic was interfering with the sensations they sought to obtain from the opium they were smoking through bits of reed. The Ottomans, that is the nations inhabiting the north of Africa, the southwest of Asia and a portion of Europe, prefer the intoxication produced by hasheesh, which is a preparation of the Indian hemp, and which they smoke under the names of kiff, hasheesh or tekhomi.

The leaves of this plant are sometimes fried in honey and butter to extract the active resinous portion, and this they eat, as we should, gum drops. The first smokers and eaters of hasheesh were called hasheeshins, from which our word "assassin" is derived, and the custom was first practised in the days of the Crusaders by a powerful enemy of theirs, "The Old Man of the Mountain," as he was called, and who obtained the most implicit obedience from many followers by supplying them with this drug.

The effect on the system is remarkable, and unlike that of opium, tobacco or alcohol. It immediately acts on the brain and nervous system, but does not stimulate the *creative* faculty, as does opium, and does not produce insensibilty like alcohol, but while it allows its victim to be sensible to what is passing around, it intensifies sensations ,and enlarges and expands to a most miraculous degree the objects by which the person under its influence is surrounded. Thus a few yards seems the stretch of a desert, and a tree is magnified into a forest, then comes short and pleasant dreams—the world ideal mingled with the world actual. Persons who are in the habit of using this drug usually terminate their existence as lunatics, and since the French have had Algeria their insane hospitals have been filled with the victims of hasheesh.

VELOCITY OF THE WIND.—When the wind moves at the rate of one mile an hour, it is hardly perceptible, at two miles an hour it fans us as the gentle zephyr, and at six it becomes a pleasant wind. From ten to twenty, it becomes high, and thirty to fifty characterize storms from light to hard; at eighty miles an hour it becomes a hurricane, and at 100 a tornado.

## FISHER'S GOLD AMALGAMATOR.




Gold, as every one now-a-days is, we suppose, aware, occurs in the quartzose rock, in thin small veins, or in bright little rounded specks disseminated through the mass. Some of these grains, in fact, a great proportion, are scarcely visible to the naked eye, and they are often washed from the crushers with the waste gangue. We have hitherto had no perfect device for catching this part of the washed ore, and a great quantity of valuable amalgam has consequently been lost. The quartz is placed in boxes with mercury and crushed by heavy stamps, and the refuse quartz is washed away by a stream of water, in which some of the amalgam is also carried off. To prevent this, J. H. Fisher, of San Francisco, Cal., has invented the machine which is the subject of our illustration, so that by its means any amalgam that may be washed away from the stamps will be caught and saved.

This machine is placed in a frame, A, and consists of a large wheel, G, made of two rims connected by slats of metal, *a*, and supported on the shaft, L, by means of the hub, K, and radial arms. It may be rotated by a band wheel, M, or a crank. Inside this wheel is placed a cylinder, F, the periphery or surface of which is of silver, or some metal which easily amalgamates with mercury, and as the wheel, G, rotates, the cylinder, F, revolves slowly within it by the force of gravity. The washings are conducted from the stamps into a chute, C, which is provided with a grating, D, to prevent any large uncrushed pieces of quartz passing into the machine, and either damaging the face of the cylinder, or hindering the proper working of the parts. A movable flap, E, directs the washings on to the face of the cylinder, F, where the silver surface catches hold, as it were, of all pieces or globules of amalgam, and they join as part of its surface, the refuse passing away through the chute, H, and door, I.

The whole or part may be constructed of cast iron, and covered by a case, B, and the only expense is the first cost, as, when the amalgam is scraped off the surface of the cylinder, F, the silver can be recovered just as easily as the gold and mercury.

To the miner and mining appliances this is a valuable addition, as it will enable many rocks and auriferous sands to be worked which have before been unprofitable, and thus will serve to develop to a greater extent the gold resources of our country. There is no metal, if we except iron, which is so universally diffused as gold, and chemistry has demonstrated its existence in the most unlooked-for places—for instance, in sea water, and the human body. There are rocks almost everywhere containing not quite enough of the precious metal to be worked in the ordinary way, on account of the minuteness of the grains. With this machine, however, any sized grains, when once amalgamated, can be caught, and thus gold-mining be extended, while in the present mines it will effect a great saving, and considerably increase the profit of such operations.

It was patented February 2, 1858. Any further particulars can be obtained by addressing the inventor as above.

### An Effective Turbine.

A turbine water wheel constructed by S. K. Baldwin, of Laconia, N. H., for a mill near Nashua, on a fall only 7·87 feet in hight, gives out eighty per cent of its water power. This is the highest percentage known to us of power given out by a wheel on such a low fall. One of Mr. Boyden's at Nashua gives out eighty per cent, but it is 200-horse power, on a fall of 33 feet, whereas Baldwin's is only 13·4 horse power. Wheels on high falls should give out more power in proportion than those erected on low falls. An engraving of this wheel appeared on page 404, Vol. XII, SCIENTIFIC AMERICAN.

### Domestic Recipes.

SCENTED OILS.—Some of these are sold by perfumers at a very high profit; they can all be prepared at a very small expense. Take a quart of common olive oil, and heat it in a stoneware vessel up to 212°, then add half an ounce of sal-soda, and stir all for fifteen minutes. Allow the oil to cool, and a sediment will fall to the bottom; pour off the clear, and scent it with any of the essential oils, such as rosemary, bergamot, and lavender. One-fourth of an ounce of essential oil will scent a quart of the prepared oil, which is very excellent for the hair, and equal to Rowland's celebrated Maccassar oil, sold at such extravagant prices.

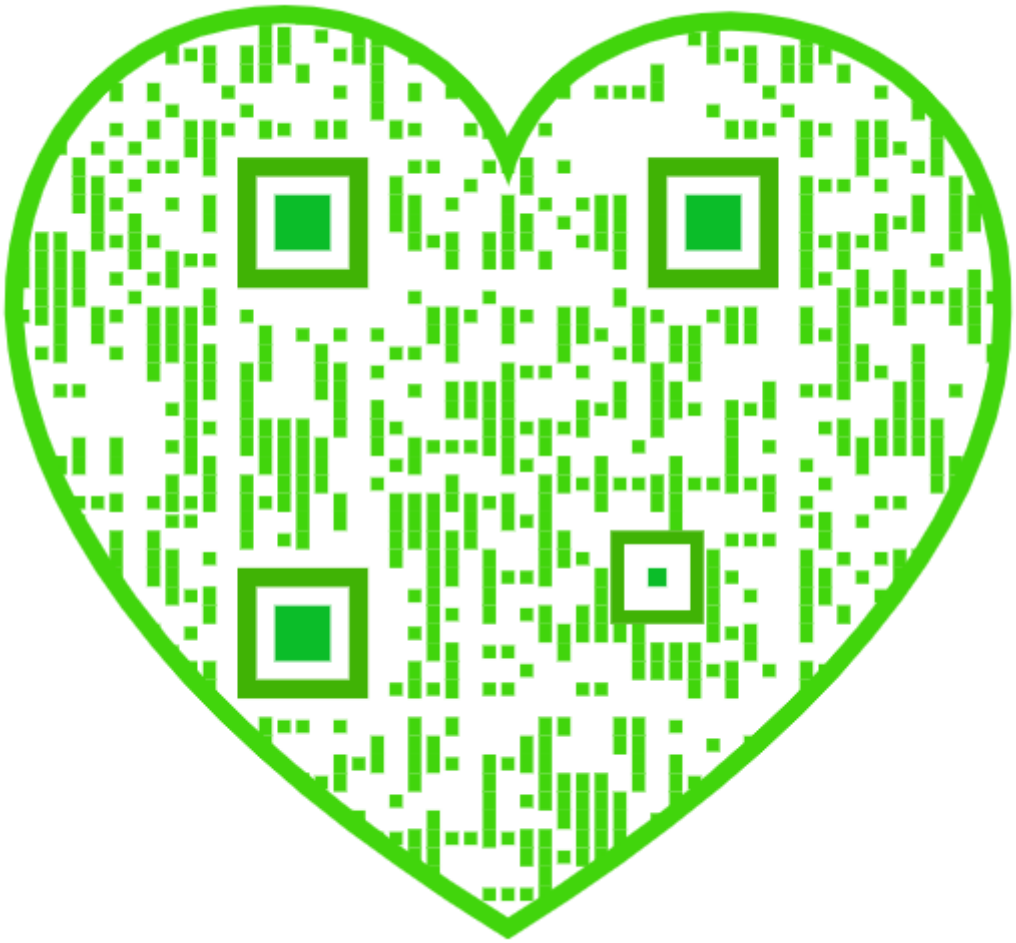
LUCIFER MATCH COMPOSITION.—Take one ounce and a half of glue, one ounce of phosphorus, two and a half ounces of niter, one ounce and a quarter of red ocher, and half an ounce of smalt. Having carefully weighed out the ingredients, manipulate as follows:—First reduce the glue to a smooth jelly in warm water, the temperature of which is not to be above 145° Fah.; now add the phosphorus, and stir the mixture till the latter is perfectly divided into minute particles; then add the remaining materials, and mix them till the whole is one uniform paste. The composition must be kept warm, but never warmer than the thermometer heat above mentioned. Finally, the matches are to have their ends rubbed over a hot iron plate, and then dipped into the paste and left to dry in an airy situation. Some manufacturers use all smalt instead of the ocher; others use red lead in lieu of either. Private individuals cannot, of course, make matches, but every one should know the nature of common things.

ASTHMA PAPER.—Persons subject to attacks of spasmodic asthma will receive some relief during the paroxyms, by inhaling fumes given off from burning paper prepared with saltpeter. The paper should be loose and white, the same as that used for absorbing ink blots, and it should not contain any fibers of wool. Four ounces of saltpeter dissolved in a pint of water makes a solution of sufficient strength for the purpose. The paper is soaked in this for a few minutes, then taken out and dried thoroughly. It is then cut into pieces four inches square, and one or two pieces burned when required. Paper prepared in this manner gives out a considerable amount of free oxygen gas when it is burned. This has been tried by some of our friends with good effects.

FRAGRANT OIL.—Collect a quantity of the leaves of any flowers that have an agreeable fragrance; card thin layers of cotton, and dip into the finest sweet oil; sprinkle a small quantity of fine salt on the flowers, and lay first a layer of cotton and then a layer of flowers, until an earthenware vessel, or a wide-mouthed glass bottle, is full. Tie the top well over with a bladder, then place the vessel in a southern aspect, so that it may have the heat of the sun; and in fifteen days, when uncovered, a fragrant oil may be squeezed away from the whole mass.

ODORIFEROUS WATER.—Take essence of ambergris, 1 drachm; essence of musk, 1 drachm; essence of bergamot, 2 drachms oil of cloves, 20 drops; spirits of wine, 6 ounces; orange flower water, 4 ounces; distilled water, 4 ounces. Mix all together, and let them digest for a few days, at least a week, frequently shaking; then filter for use.

© 1858 SCIENTIFIC AMERICAN, INC.



**Issued from the United States Patent Office**

FOR THE WEEK ENDING OCTOBER 12, 1858.

[*Reported officially for the Scientific American.*]

*** Circulars giving full particulars of the mode of applying for patents, size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

REVOLVING FIREARM—Thomas R. Austin, of New York City: I claim, first, The main spring, J, attached to or formed on the trigger, A, substantially as specified, whereby the pull on said trigger strains the main spring, as set forth.

Second, I claim the sliding center pin, I, shield, H, pin, H', and toggle joints, G G', when combined with the latch, o', for disconnecting the pin, I, as described and shown.

Third, I claim the double-acting spring, N, fitted and acting as specified, to return the sere, L, and trigger, A, and parts attached to their quiescent position, as set forth.

HOT AIR COOK'S STOVE—Joseph M. Babcock, of Albany, N. Y.: I am aware that perforated side plates are not new, and also that elevated ovens are not new, and also that double top plates have been used, with aperures communicating with the fire.

I am also aware that hot air has been used and passed around the oven by Silas T. Savage, for the purpose of cooking; hence I do not claim any of these in this application.

Neither do I claim the form and construction of the oven.

But I claim the combination of the double top, the perforated side plates, and the elevated oven, the same being arranged and operated in the manner and for the purpose described.

METHOD OF ADJUSTING WINDOW BLINDS—W. H. Babcock, of Homer, N. Y.: I am aware that gearing has been applied to blinds for the purpose of opening and closing them from within an apartment without raising the sash.

I therefore do not claim the described contrivance for operating the blinds, nor the contrivance for operating the slats.

But I claim the sliding spindle or arbor for alternately engaging the two mechanisms which severally move the slats and open the shutter, so as to operate either mechanism by the same handle, substantially as shown and described.

[This invention consists in having an arbor pass horizontally through the casing near the lower part of the blind, said arbor being allowed to slide longitudinally in its bearings to a certain extent, so that a conical screw or spiral flanched pinion, which is on the outer end of said arbor, and gears into a toothed wheel on the blind, may be connected with and disconnected from the arbor, as desired; a toothed wheel being also placed loosely on the arbor, which wheel, when the blind is closed, gears into a segment rack on the lever, which is connected with the slat rod; the whole being arranged so that the blind, by adjusting the arbor, and properly turning the same, may be opened and closed at the inner side without raising the sash, and the slats, when the blind is closed, also adjusted.]

GAS BURNERS—Yarnall Baily, of Philadelphia, Pa.: I am aware that heaters have been used for similar purposes heretofore; I therefore do not desire to claim the idea or invention of generating the vapor by the use of heaters arranged in contact with the flame of lamps or gas burners.

But I claim the mode of producing a flame, the extent of which may be increased or diminished at pleasure, by means of the adjustable heater, D, in connection with the tube, B, and the burner, b, substantially as described, or any equivalent to the same.

WATER CLOSET—Frederick H. Bartholomew, of New York City: First, I claim the use of a drip box or leak chamber, arranged above the closet and below and around the supply cock, substantially as described.

Second, I claim arranging the supply cock upon the cover of the closet, whether the drip box be employed or not, substantially as described.

Third, I claim the adjusting screw, D, the cam, M, and the lever, H, or the equivalent thereof, arranged for the purposes substantially as described.

Fourth, I also claim the laterally adjustable standard, substantially as described and for the purpose set forth.

HINGE—Mathias Bettinger and August Boos, of Cincinnati, Ohio: We claim the described arrangement and combination of the lugs, F F, and horns, C C, for the purposes set forth.

GRAIN DRILLS—Samuel Binkley, of Dublin, Ind.: I claim the slide, B, in the described combination with the grooved or corrugated staple, E, for the purposes set forth.

CAR COUPLINGS—George S. Bishop, of Washington, D. C.: I claim the loop bolt or pin, B, in combination with the slots, H and L, and slide block with grooves, as described.

Second, I claim the manner of supporting the loop bolt, by allowing the short arm to rest on the bumper head, as N, instead of resting on a block or ball, whether the slots, H and L, be separated or connected, when constructed and operated in the manner set forth.

ESCAPEMENT FOR TIME-KEEPERS—Josiah Bishop, of Austin, Texas: I claim the combination of the lever, E, springs, G H, and the detents formed on the former, arranged in the relation to the escapement wheel described, with the pallets, L M, and said escapement wheel, so as to enable the balance wheel to perform its oscillations without pressure from the motive power of the clock, or to be retarded by any other resistance except that necessary to be overcome by the vibrations of the detent lever, E, during the action of the pallet, L, on the end of the spring, K, as set forth.

[The nature of this invention consists in so forming the detents on the lever, and arranging them in relation to the notches of the escape wheel and pallets on the balance arbor, as to render the movements of the clock or watch to which they are attached, more regular, and less liable to get out of order.]

MACHINES FOR DRESSING STONE——William Cooper, of Mount Gilead, Ohio: I claim the arrangement of the picks, A A, screw, a a, springs, c c, and shaft, D, with the adjustable carriage, E, ratchet wheels, m n o, and ratchet, F, the same being constructed, combined and operated in the manner and for the purpose specified.

CULTIVATORS—C. H. Carrington and S. E. Carrington, of Weymouth, Ohio: We claim the arrangement and combination of the side wings, E E, and bars, H H, with each other, and in relation to the frame, A, substantially in the manner and for the purpose specified.

We also claim the mode of actuating and adjusting the hoes, K K, by means of the wheels, D D, stirrups, h h, bar, L, lever, M, and catch plate, N, arranged in combination, and acting upon the handles, J J, of the hoes, substantially as set forth.

MACHINE FOR PEELING WILLOW—George J. Colby, of Waterbury, Vt.: I claim the vibrating rollers, B B', in combination with the rollers, L M H H', comb, N, and apron, K, or its equivalent, the whole being arranged to operate as and for the purpose set forth.

[By the employment of detaching rollers, endless apron, separating and discharging rollers, the willow used by basket-makers is completely stripped of its bark, and rendered ready for use.]

HARVESTERS—George E. Cooper, of Baltimore, Md.: I claim the combination of the straining bar, finger tube, and adjusting screw, with the arms upon which the cutting blade is mounted, for the purpose of keeping the cutter, which is made thin and without stock, under constant tension, substantially as described.

Second, Combining the lever of the shifting clutch with the lever for raising and lowering the cutting apparatus, in the manner described, so that when it is necessary to stop the motion of the cutter, the act of depressing the lever performs the three-fold duty of raising the cutter, stopping its motion, and the motion of the raking mechanism, as described.

I do not claim, however, either of these levers, separately considered, nor the functions they perform.

Third, The arrangement of the raking mechanism consisting of two hands, which open as they advance over the platform, on each side of the cut grain, and close as they recede, to form the cut grain into a sheaf, and deliver it at the rear of said platform, substantially as described.

MACHINE FOR SWEEPING STREETS—Amzi Crane, of Newark, N. J.: I claim, first, The brush or sweeping frame, being so adjusted that when the machine is in operation, the weight of the said frame is supported, as much as may be required, at its corners, upon the springs, W W W W, in the posts, S S S S, and is free to conform to the uneven surface of the ground either as a whole, or at any of its corners, substantially as described.

Second, I claim the endless band or chain of brushes, when said band or chain of brushes is operated, for the purpose of depositing the sweepings in a row by means of the grooved rollers, z z, or their equivalents, into which the blocks of the brushes or the links of the endless chain are made to fit, substantially as described.

Third, I claim the combination together of the driving wheel, A, the beveled wheel, C, with the pulley, A', belt, M, rollers, z z, and the endless band or chain of brushes, substantially as described.

Fourth, I claim the combination of the cross bar, E, with the lever, D, crank, H, levers, K and L, with their appropriate connections, and the chains, R R R R, for elevating or lowering the brush frame, and throwing the machine into or out of gear, substantially in the manner and for the purpose described.

CIRCULAR SAWING SHINGLE MACHINE—Jonathan Creager, of Cincinnati, Ohio: I claim, first, The feed rest, D d E, tangential to the saw, at the end toward which the saw cuts, and having a motion parallel to the plane of the saw, as set forth.

Second, In this connection the feed rolls, G G, and their accessories, constructed to elevate the feed rest by power under control of the operator, as set forth.

Third, The use in this connection of the elastic fingers, M' M, as set forth.

SEWING MACHINES—Chauncey O. Crosby, of New Haven, Conn.: I am aware that a rough surface (fluted roller or otherwise) has been used for feeding for ages, in spinning machines, and for feeding cloth and various other materials, that the common sewing needle (with the eye at one end and the point at the other) is not new, and that cams, levers, &c., are old; I therefore do not claim either of these, as such, as my invention.

But I claim, first, The combination of the cloth holder with the needle bar and thimble bar, when constructed and made to operate substantially as described.

Second, I claim the combination of the needle bar and thimble bar with a common needle, when made to operate, substantially as described.

Third, I claim the combination of the feeding apparatus with the needle bar, for carrying the needle, when made to operate substantially as described.

Fourth, I claim the combination of the needle bar with the hooks and endless tapes, when arranged and made to operate substantially as described.

GRINDING AND POLISHING KNIVES—James Dodge, of Waterford, N. Y.: I claim the method of grinding and polishing articles, and forming their surfaces upon a revolving grindstone or polishing wheel, by attaching them to a drum or cylinder, which is made to revolve in the same direction with the stone or wheel, and with velocity adjustable thereto, substantially as set forth.

I further claim the method of attaching and supporting upon a curved surface the article to be ground, so as to permit it to rock thereon, thereby shaping the surface, when formed either flat, concave, or concave, substantially as set forth.

FASTENINGS FOR SKIRT HOOPS—Alexander Douglas and Samuel S. Sherwood, of New York City: We are aware that clasps and various other devices have been used to fasten the ends of skirt hoops.

We are also aware that a slide has been used in combination with a rivet as a fastening, for other purposes; but all these contrivances fail, in some essential particular, to possess the requisites necessary to make such article as the necessities of the case demand. We do not claim any of these devices.

Neither do we claim separately any part of the combination we have described.

We claim the combination of the link or loop, C, with the clasp, B, having an opening in its side to receive and retain one prong of said loop, and with the hook, substantially as and for the purposes set forth.

PORTABLE BOXES—A. Drey pring, of Montgomery, Ala.: I claim constructing boxes, capable of being folded and unfolded, without thereby impairing their shape or their usefulness, substantially as described.

MACHINE FOR CROSS SEAMING SHEET METAL—Lucian Fay, of Cincinnati, Ohio: I claim, first, In the described connection, with a cross-seaming tool, the gage bar, Q q, constructed and operating substantially as and for the purpose set forth.

Second, The grooved roller or reel, D d, constructed substantially as explained, and employed in the described connection with a cross-seaming tool to roll up the metal as joined, and afterward discharge the roll without unwinding as set forth.

Third, The adjustable guides, U U, in the described combination, with a seaming tool for the purpose of insuring accuracy of work.

CONSTRUCTION OF IRON RAILINGS—Wm. S. Fuller, of Millbury, Mass.: I do not claim the application of lugs and collars to the palings and connecting rod, as described and claimed in a patent granted in April, 1857, to my assignee, Wm. D. Cutler.

But I claim as an improvement or new arrangement of parts, viz., the application and arrangement of ring segments, or segmental connections and their sockets made substantially as described to fence palings and a connection rod, the same being to effect advantages in the construction of metallic fences.

PEN-HOLDER—Josee Johnson, of New York City: I claim the thimble, A, with incision, C, when formed of one piece of metal and applied to the pen stock, B, as a pen-holder, operating as described and for the purposes set forth.

SEWING MACHINES—J. E. A. Gibb, of Mill Point, Va.: I claim, in combination with an eye-pointed needle vibrating up and down and back and forth in a plane passing through the line of feed, the spring hook, J, or a hook constructed so as to yield sidewise or laterally of the path of the needle, when actuated by said needle in the manner and for the purpose of operating substantially as described.

SEWING MACHINES—Wm. O. Grover, of Boston, Mass.: I claim, first, Driving or speeding up a sewing machine by means of a convex elastic face on one wheel or pulley acting in combination with and by friction upon a non-elastic concave face on another wheel or pulley combined and acting together, substantially in the manner and for the purposes specified.

Second, I claim supporting and steadying a sewing machine by the combination of a tube of india-rubber, or its equivalent, with an internal pin or projection, the two being fitted and acting substantially in the manner and for the purposes set forth.

WATER WHEEL—Wm. H. Harbaugh, of Piquia, Ohio: I claim, first, The peculiar arrangement of the bucket, E, in combination with the projecting annular float, B, for the purposes specified.

Second, I claim the peculiar form of the bucket, E, with reference to the percussion plate, a, all arranged and operating in the manner and for the purposes set forth.

SELF-CLOSING DOOR—J. C. Harkness, of Washington, D. C.: I claim the ball, E, projecting through the socket in the bridle, F, and falling into a socket in the plate, G, in the sill, in combination with the weight, cord and pulleys, the whole arranged and operating substantially in the manner and for the purpose described and set forth.

TANNING—B. Harrington and N. Russell, of China, Me.: We claim the use of comptonia aspenifolia, or sweet fern in room of bark or any other tanning material now in use.

CENTRIFUGAL PUMPS—Wm. C. Hibbard, of West Roxbury, Mass.: I claim, first, In the construction of the fan wheel, the combination of the curved guide plate, B, with the vanes, C, arranged around a central open space, substantially as described, and working in connection with the covers, D and F, and casing, A, or such other equivalent devices as will co-operate with it upon the same principle.

I do not claim the spiral passage of discharge constantly enlarging towards its exit, to receive the accumulated discharge from the fan wheel, as that has before been used; but in combination with the centrifugal pump, I claim the expanding outlet constructed upon the principle described, whether employed in combination with the spiral passage of discharge or applied directly to the fan wheel, substantially as described.

I also claim constructing the casing of a centrifugal pump, with a detached cover, F, in combination with the fan wheel and fixed casing, substantially as described.

WATER WHEEL—J. P. Hoyt and D. W. Hoyt, of Lumber City, Pa.: We claim the combination of a wheel as constructed, with the casing as constructed, when the two are so arranged that the water will be received on the broad backs of the buckets, and be discharged by their inclined fronts between the casing and the shaft of the wheel, in the manner specified and for the purpose set forth.

INDEX OR BOOKMARKER—Josee Johnson, of New York City: I claim the clasp, A, made of one piece of metal, with the angle between its points for receiving the leaf, while the clasp is applied in a vertical position or nearly so, and opening to receive the leaf as it is pressed against its edge, and firmly grasping the leaf when applied, operating as described and for the purposes set forth.

[This is a convenient and simple little metal clasp, which forms a ready and useful book-marker for indicating figures, letters or lines.]

TOOL FOR CHAMFERING SOLES FOR BOOTS AND SHOES—Wm. Johnson, of Hampstead, N. H.: I claim the improved chamfering tool as constructed with means not only of adjusting the angular position of the knife with respect to the sole rest, but the distance of the said edge, at the gage from the rest as described.

APPARATUS FOR PRESERVING MALT LIQUORS—John Keane, of New York City: I am aware that a bag of india-rubber has been inserted in a cask at the bung-hole to accomplish the same object as the diaphragm, B, which constitutes my invention, and therefore I disclaim such a contrivance which must accomplish the desired object in a very imperfect manner, and is liable to many objections.

But I claim the diaphragm or bag of india-rubber or other similar flexible material of a form to fit simply to half of the cask or other vessel and attached all round the middle of the same, so as to operate in the manner described for the purpose set forth.

[A diaphragm or bag of india-rubber or other flexible material of a size and form to constitute a lining to half of the vessel to which it is applied is used, and it is secured by its edges all round the interior of the vessel near the middle. When the vessel is full of liquor, this diaphragm or bag lies snugly around the interior and close to one end, and a vent being in the vessel on the opposite side of the diaphragm to that on which the liquor is contained, the diaphragm is caused to follow the liquor closely as fast as it subsides by being drawn off, and thus the air is excluded. The invention is particularly advantageous in its application to beer casks, but may be applied with advantage to vessels for containing any liquors which would be injured by contact with air, and which require racking or drawing off.]

TRUSS PADS—L. B. McLain, Sr., of New Lisbon, O.: I claim constructing pads for trusses for hernia or rupture of solid blocks of half cones with plane and curved faces, as set forth.

STIRRUPS—John Loudon and H. Iversen, of New York City: We claim constructing a stirrup with a joint at or near the center of the sides, b, substantially as and for the purposes specified.

BOX FOR CARRIAGE WHEELS—R. W. McClelland, of Pekin, Ill.: I claim, in combination, a hub box with an interior groove and flange as represented, the peculiar manner of constructing and placing upon the spindle the spindle boxes or bearings so as to properly fit into the above described hub boxes, all as represented in the specifications in the manner and for the purposes expressed.

CONSTRUCTING FRAMES FOR WIRE CLOTH PAPER-MAKING CYLINDERS—J. McMurray and R. McMurray, of New York City: We are aware that a wire, j, has been wound spirally around longitudinal bars in order to form a cylindrical surface or bed to a frame to receive the wire cloth, and we do not claim separately said wire.

But we claim the spiral wire or rod, B, and longitudinal rods, e, connected to suitable heads, A, provided with journals, c', in connection with the spiral wire, j, the whole being arranged substantially as and for the purpose set forth.

[The object of this invention is to obtain a very rigid frame, one that will retain its form, so as to ensure a perfect cylindrical wire cloth surface. The invention is designed to be used in paper machines, and in other cases where wire cloth cylinders are employed, and where it is necessary that the wire cloth be retained in a perfectly cylindrical form in order to perform correctly the desired work.]

KNITTING MACHINES—J. K. Kilbourn and E. E. Kilbourn, of Norfolk, Conn.: We claim the transferring of stitches in a knitting machine from the needles on which they have been formed to other needles by means of transferring hooks, or their equivalents, which take the stitches from the needles, move along to other needles and deliver the stitches to these other needles, operating automatically substantially as set forth.

We also claim arranging transferring hooks with reference to the needles in such manner that they may enter the stitches upon the needles by moving along the stems of the needles toward their heads, substantially as set forth.

We also claim directing the operation of transferring hooks, or their equivalents, for transferring stitches by means of a pattern barrel, or its equivalent, operating substantially as set forth.

We also claim combining the mechanism that actuates transferring prongs with the mechanism that moves the needles of a knitting machine in such manner that the prongs enter the stitches upon the needles at times when the latter are supported both vertically and laterally, substantially as set forth.

We also claim combining a nosing having V-shaped grooves, with transferring prongs having corresponding grooves, the grooves of the nosing and prongs acting in concert to confine the needles and direct their heads into the stitches on the transferring prongs.

We also claim controlling the operation of the mechanism by means of which the relation of the thread guide to the needles is changed, so that yarn is supplied to more or less needles by means of a pattern barrel, or its equivalent, operating substantially as set forth.

We also claim varying the extent of travel of the needle carriage in proportion to the number of needles at work by means of mechanism operating automatically, substantially as set forth.

We also claim varying the periods of time at which the transferring mechanism begins to operate in proportion to the number of needles at work by means of mechanism operating automatically, substantially as set forth.

We also claim combining the widening mechanism with the mechanism that actuates the needle carriage in such manner that the period of time at which the former operates is varied in proportion to the number of needles at work.

We also claim combining the mechanism that actuates the pattern barrel, or its equivalent, with the mechanism that actuates the needle carriage, in such manner that the period of time at which the former is moved is varied in proportion to the number of needles at work.

We also claim combining the widening mechanism and the narrowing mechanism together, when both are used in the same machine, in such manner that the movement of the one to do its work is attended by a corresponding movement of the other, so that the thread guide and transferring hook, or their equivalents, are both in the proper position to operate in connection with the selvage needle.

We also claim raising the sinkers out of the way of the prongs of the transferring instrument, substantially as set forth, so that the latter may move along the series of needles without obstruction from the sinkers, substantially as set forth.

We also claim obtaining a pause in the endwise movement of a nut moved by a screw, by causing the screw to move endwise while it is turning in the nut, substantially as set forth.

We also claim the arrangement of the pattern holes of a pattern barrel in a helical line, so that they may be brought in succession beneath the device upon which the pattern pins operate by a screw or its equivalent.

We also claim operating the transferring instrument substantially as set forth, in such manner that its movement is effected partly while the carriage is traveling in one direction, and partly while it is traveling in the opposite direction.

We also claim combining with a traveling series of needles and a rigid bar above them, stationary under supports, over which the needles ride, so that their barbs may be closed by pressure against the stationary bar above them.

GAS REGULATORS—Wm. Mallerd, of Bridgeport, Ct.: I do not claim, broadly, the use of the rising and falling of the reservoir, 2, for the purpose of regulating the pressure of the gas.

But I claim arranging the graduated lever, 4, with the adjustable weight, 17, in combination with the reservoir, 2, and the valve, 10, in such a manner that by raising the reservoir the valve is closed and the supply of gas stopped, so that the pressure of the reservoir can be regulated by adjusting the weight, 17.

And in combination with the lever and reservoir, I claim admitting the gas to the reservoir by means of a small tube, 8, which is contracted toward its upper end, so that impurities carried up by the gas are deposited outside of said tube without being able to interfere with the working parts of the gas regulator.

And I further claim arranging the stud, 21, in combination with lever, 4, rod, 9, and valve, 10, in such a manner that by depressing the stud, 21, the supply of gas may be ascertained, without raising the cover of the regulator.

[By means of this invention the pressure of gas in the discharge pipes is regulated independently of the pressure in the supply pipes. This is done by a sliding weight on a graduated lever pressing on an inverted cup or reservoir, which is raised by the gas as soon as its pressure reaches the desired point; and this lever is connected with a valve in such a manner that by raising the lever, the valve is closed, and the supply of gas stopped until the pressure of the gas in the reservoir is reduced again below the desired point. The invention further consists in effecting the communication between the supply pipes and the reservoir by means of a small tube contracted towards its upper end, so that all foreign substances or condensible matter will be deposited on the sides of the tube, and not pass to the burner.]

CULTIVATORS—T. M. Lee, of Broad Ford, Va.: I claim so combining the cylinder, R, stock, H, and block, o, with their respective teeth, a d g, with each other, and with the main frame A as that can individually or severally be adjusted for deeper or shallower work, substantially as and for the purpose set forth.

MACHINE FOR CHAMFERING AND CROZING BARRELS—J. H. Mattison, of Scriba, N. Y.: I claim a crozing tool provided with two spurs, one before the other, to cut the sides of the croze or score, and a hook or grooving tool to cut the bottom of the score, when the whole is made or formed of a single piece of metal, substantially as described.

I claim the use of the solid shaft, P, and hollow shaft, Q, in combination with the pulleys, T U V and W, or their equivalents, which operate them with different velocities, when used for the purpose of giving motion to the chamfering and crozing tools, or their equivalents, and for moving or carrying them (the chamfering and crozing tools) forward to perform their work in chamfering and crozing barrels in the way and manner described.

PAPER CLAMPS—Arnold Palmer, of Lee, Mass.: I claim the pressure box, E, placed over the bed, F, and attached to the lever, I, through the medium of the bar, D, lever, C, and adjusting rods, G H, actuated by the nut or tube, f, the above parts being arranged to operate as shown, and with or without the spring catch, i, for the purpose set forth.

[The object of this invention is to obtain a cheap and durable form press or clamp used by bookbinders, one that may be manipulated with great facility, far more so than those of ordinary construction, and expedite the work of trimming in a very considerable degree.]

© 1858 SCIENTIFIC AMERICAN, INC.

PORTABLE AND WATERPROOF FRICTION MATCH SAFE—Platt Merrill, of Port Sanilac, Mich. : I claim the lever, B, provided with the spring or yielding slide, C, the plate, F, having the spring, G, and guides, r r, for retaining the matches in place, and the arm, E, provided with the corrugated spring catch, p, the whole being arranged within and connected to the case, A, substantially as and for the purpose set forth.

[In this invention a portable box or case similar to a porte-monnaie case is employed, provided internally with certain mechanism, so arranged that when the box or case is supplied with matches dispersed within it in a certain way, a match may, by actuating a lever, be pushed from the box or case in an ignited state ready for use, without exposing the matches within the box either to dampness or the danger of casual ignition.]

MACHINES FOR SEPARATING THE FIBER FROM THE PULP IN HEMP LEAVES—S. S. Mills, of Charleston, S. C. : I do not claim preparing the hemp leaves by boiling or steaming the same in vats, for this has been previously done in preparing ordinary hemp stalks.

But I claim, first, The toothed cylinder, H, concave, C, provided with the steam or water pipe, S, and reciprocating bar, D, provided with the clamp, E, arranged substantially as shown for shredding the hemp, as set forth.

Second, The vibrating toothed plates, Q Q, in combination with the reciprocating clamp bar, L, and steam or water pipes, R R, for the purpose of heckling the hemp, as described.

Third, The cylinder, H, provided with the longitudinal plates, e, and the concave, I, provided with the loaded plates or flaps. J, combined arranged substantially as shown for the purpose of skutching the hemp or separating the pulp from the fiber.

Fourth, The combination of the tooth cylinder, B, concave, C, toothed plates. Q Q. clamp bars, D L, cylinder, H, and concave, I, provided respectively with the plates, e J, when the whole are arranged for joint operation, substantially as and for the purpose specified.

[This invention consists in the use of a shredding cylinder, heckling device and skutching cylinder, in connection with reciprocating clamps or holders, arranged so that the separation of the fibrous portion of the leaves of hemp from the soft pulpy portion is readily effected and in a perfect manner.]

MANUFACTURE OF SHEET IRON—David A. Morris, of Pittsburg, Pa.: I claim the manufacturing of enameled anti-corrosive sheet iron by the process specified.

COMPOUND SHELL FOR ORDNANCE—L. B. Olmsted, of Binghampton, N. Y.: I claim surrounding an explosive shell with a number of chambered segments each charged with cartridges or other projectiles and discharged by fuses properly connected with the inner exploding shell, the whole forming a second or outer spherical shell arranged in the manner set forth.

MANUFACTURE OF FIRE BRICKS—J. Ostrander, and J. S. Heartt, of Troy : We claim the manufacturing of fire bricks, tiles or blocksof a composition consisting essentiaily of pulverized steatite or soapstone raw fire clay (with or without kaolin), and fire sand or ground "biscuit," or both, the ingredients being mixed in the ratio specified, or in any other available proportions, as set forth.

LIFE PRESERVER—Hiram Palmer, of Augusta, Mich.: I claim the arrangement of the folding frame, A, the metal chambers, B B, the provision chamber, D, within said chambers, B B, the flexible air chambers, C C, and the propeller, E, the whole being combined and operated in the manner and for the purpose specified.

MOWING MACHINES—Fisk Russell, of South Boston, Mass. : I do not claim attaching the wheel, D, to a crank, i, placed on an arm, k, projecting from the main frame, A, for this has been previously done, in order to elevate, when necessary, the finger bar.

Nor do I claim attaching the finger bar to the main frame by a joint.

Neither do I claim separately, or in themselves considered, the vibrating cutters, J, for they have been previously used, although arranged differently from the plan shown and described.

But I claim attaching the cutters, J, to hubs or bosses q, which are fitted on pins, r, in the finger bar, and provided with arms, u, which are fitted in notches in the cutter bar, H, the bosses, q, arms, u, and bar, ', being covered by a plate, substantially as and for the purpose set forth.

[This is an improvement in that class of mowing machines in which detached vibrating or oscillating cutters are used. The object of the invention is to so arrange the cutters that they will offer no obstruction to the cut grass, but allow the same to pass freely over the finger bar without the possibility of choking or clogging the cutting device. The invention also consists in a novel way of attaching the finger bar to the main frame, whereby the finger bar may be raised or lowered bodily with the main frame, in order to allow it to pass freely over obstructions, and still permit it, when in use, to conform to the varying surface of the ground.]

COMPOSITIONS USED AS BUILDING MATERIALS—N. C. Raymond, of Austin, Texas : I claim the application of pasture-fed cow dung, either in substance or solution, together with lime, either slacked or unslacked, or other powerful alkaline substance, and charcoal, to the common clays or soils of the country, for the purpose of producing a building material, substantially as described.

HORSESHOE MACHINE—T. H. Russell, of Northfield, Vt., and Amos Morrill, of Strafford, Vt. : We are aware that formers have been previously used, and also forming or pressure rollers for similar or analogous purposes, as described.

But we are not aware that a movable former arranged with lateral forming rollers, and a vertical pressure roller and female die have been used, and so operated as to form the simple and efficient machine shown and described.

We therefore disclaim all the above-named parts when separately considered, and irrespective of arrangement.

But we claim the movable former, K, lateral forming rollers, Q Q, arranged with the guide rollers, O R, and grooves, l l n n, the vertical pressure roller, I, and the female die, L, when combined and arranged for joint operation substantially as and for the purpose set forth.

We further claim the particular arrangement of the roller bar, G, to wit, having said bar provided with the rollers, i' i', which bear against blocks, j j, attached to the uprights, H H, and having the pin, h, pass through an oblong slot, g, in the upper part of the bar, substantially as and for the purpose set forth.

[By the use of two lateral forming rollers, a vertical pressure roller, and an adjustable or movable former or die, the making of horseshoes is performed at one operation, the shoes being made directly from the bar, without any manipulation on the part of the operator or attendant except the feeding of the bar to the machine.]

CONSTRUCTION OF CYLINDERS AND PISTONS FOR PUMPS AND STEAM ENGINES—Wallace Wells, of New York City : I claim the improved mode described of constructing the cylinders, pistons, and their connections, for steam engines, and applying steam thereto, and of constructing the cylinders, pistons, and their connections, in fire engines, pumps and other machines using cylinders and pistons.

METHOD OF LIGHTING STREET LAMPS BY ELECTRICITY—Charles W. Smith, of Evans, N. Y.: I claim, first, The combination and arrangement of a circuit-changer with different circuits of conducting wires, in which are included a number of street lamps, in such a manner that the lamps in one circuit only may be lighted simultaneously by means of the battery current.

Second, The combination of conducting wires with devices for operating by electricity such a circuit-changer, at a station remote from the operator.

Third, The arrangement of the magnet, A, the brass plate, C, the lever, D, and the pawl, E, substantially as and for the purposes described.

ROTARY PLANING CUTTER—John Sperry, of New York City : I claim first, A plane formed of a series of thin plates, said plates being in form of a cima-reversa, or other form approximating thereto, and placed side by side one another on a revolving axis or shaft, and confined in place by means of a screw nut, substantially as and for the purposes set forth.

Second, Having the central portion of the several sections of the plane at back and front, run at right-angles to the axis of the plane, substantially as and for the purposes set forth.

MODE OF REVERSING THE CHISEL IN MORTISING MACHINES—Frederick Stamm, of Lancaster, Pa. : I am aware of devices on mortising machines for reversing the chisel; but these I do not claim.

I claim the arrangement and combination of the devices, E F 2 S T u V W and X, substantially as described, for the purpose of reversing the chisel whilst in operation.

RULE FOR DESCRIBING POLYGONAL FORMS—Merriwether J. Thompson, of St. Joseph, Mo. : Being fully aware that instruments have been employed formed with segments of circles and arc, having graduation degrees and semi-degrees described by radial lines proceeding from one common center; therefore, such graduations, calculations, and arrangements of lines and figures I do not claim.

But I claim the construction, use and application of a miter bevel gage formed with an arc of a circle, whereon are described various given tabular numbers, so as to indicate by fixed lines, angles, or dots, any required miter line indicating its respective polygonal shape and measurement (without describing and subdividing a circumference), but through means of corresponding tabular numbers, substantially in the manner set forth and described.

FARM GATE—Joseph A. Treat, of Talmadge, Ohio: I am aware that various plans have been devised for opening and closing gates from vehicles; levers have been used and applied in various forms.

But I am not aware that a system of levers combined and arranged as shown have been employed for elevating, unlatching, and opening and closing gates by the pulling of a single chain or cord.

I do not claim, therefore, separately, or in the abstract, any of the parts shown and described.

But I claim the levers, G H, in combination with the lever, E, and link, e, said parts being applied to the gate, arranged and connected by the chains, I I F F, substantially as shown and described, to operate as and for the purpose set forth.

[By the employment of levers connected with a chain or cord arranged or applied to the gate in a peculiar manner, the gate may be raised, unlatched, and opened by actuating or pulling a single chain or cord at one side, the gate being raised and closed by actuating a similar chain or cord at the other side.]

MANUFACTURE OF SUGAR—J. C. Tucker and L. Lanzweert, of San Francisco, Cal. : We do not claim the hydrate of alumina as usually found in the trade, in nature, as claimed to be prepared dry by the Messrs. Oxyland, or precipitated by ammonia.

But we claim the process of decolorizing and defecating saccharine liquid and vegetable juices, and application in the manner described of hydrated alumina—cream of alumina—prepared as set forth.

CULTIVATORS—William Tucker, of Blackstone, Mass.: I claim the combination of the rotary toothed drum, of rotary series of teeth, a a, with a set of stationary gird bars, d d, and teeth, E E, projecting therefrom, the whole being arranged, applied to a frame, A, and constituting a new or improved cultivator, or agricultural implement, to operate substantially in the manner and for the purpose or purposes as specified.

STEAM GENERATOR—Ferdinand C. Warlick, of Kentish Town, England. Patented in England March 9th, 1858 : I do not claim any of the parts separately; nor do I confine myself to the dimensions stated,

Neither do I claim the heating of water in tubes or pipes, and then allowing such heated water to pass by jets into a highly heated chamber or vessel, as I am aware that such is not new, as will be seen by reference to George Bennett's English patent, dated August 15th, 1843. In the said Bennett's invention, however, the heating of the water was directly effected by the waste steam from the cylinder of the engine, whereas in my apparatus such is not the case, it being heated in a coil of pipes arranged within a flue space or chamber placed within the steam generator, and made to communicate with the fireplace or box, and with flues disposed against the ends and bottom and top of the generator.

What I claim is, the arrangement of the water-heating coil of pipes, within flues leading the fireplace, and through or about the steam generator, as described, when such water-heating pipes terminate in foraminous pipes, m m, extending into the steam generator, so as to discharge the heated water into it in fine jets, or spray, or mist, as described.

And in conbination with the coil containing the flue within the generator, and the flues about the ends, and cylindrical outer surface of the generator, I claim the flue space directly beneath the coil flue, and arranged within the generator, as described.

I also claim the arrangement of the side flues, the two bottom flues, and single top flue of the generator, in combination with the arrangement of the water-heating pipes extending through the same, and with the coil flue and fireplace, as represented.

SEEDING MACHINES—Andrew Simmons, of Nora, Ill. : I claim forming the seed slide of a corrugated plate, and making the seed openings therein at the edges and on opposite sides of the ridges or corrugations, substantially in the manner and for the purpose set forth.

ELASTIC STAIR PAD—Thomas J. Mayall, of Roxbury, Mass., assignor to himself and Benj. F. Cooke, of Boston, Mass. : I claim as a new article of manufacture, the above described "Elastic Stair Pad," of the composition and form substantially as set forth.

WATER WHEEL AND CHUTE—Alden Whitman, of Auburn, Me. : I do not claim a center-vent wheel as used by Dean S. Howard, John H. Gatiss, and others.

Nor do I claim the particular construction of the spout, irrespective of its relative position.

But I claim the peculiar form of the bucket in conjunction with the corresponding form and relative position of the spout thereto, in the manner described, and for the purpose set forth.

HARVESTERS—John Woody, of Mount Vernon, Ind. : I claim, first, Placing the reel, J, between arms, I I, which have their back ends pivoted to the machine, and their front ends connected with the eccentrics, H H, on the shaft, G, by means of the yokes, a a, substantially as and for the purpose set forth.

Second, The roller, O, attached to the upper part of the wing or divider, N, as and for the purpose set forth.

[This invention consists, first, in a peculiar means employed for raising and lowering the reel, and retaining the same at any desired hight: secondly, in a peculiar manner of attaching the fingers to the finger bar; and thirdly, in a ring or divider of novel construction.]

LOOMS FOR WEAVING HAIR CLOTH—Samuel B. Chaffee (for himself and as administrator of Samuel M. Chaffee, deceased), of Providence, R. I. : I claim, first, Forming the selvage of hair cloth by means of a set of heddles operating independently of the heddles used in forming the rest of the cloth, substantially as described and shown.

Second, The method described of operating the jack staff by the combination of the cams, I I', rods, K K', lever, M, and rod, N, as specified.

RACK FOR HOLDING COMB MATCH CARDS—E. G. Byam, of Boston, Mass., and B. E. Parkhurst, of Brunswick, Me., assignors to Ezekial Byam, of Charlestown, Mass., and S. A. Carlton and E. G. Byam, of Boston, Mass. : We are aware that racks have been used in which match cards are fitted and secured preparatory to dipping them, a single frame being used, having one compartment or cell, and cards secured in the frame by wedges.

But we are not aware that springs, B, have been employed for retaining each individual card, as it is placed in its compartment.

We do not claim, therefore, broadly, the employment of a frame to receive the match cards.

But we claim the arrangement and combination of the frame, A, bars, a, spring, B, and screws, d, as and for the purposes shown and described.

[This rack is formed of a rectangular frame divided by traverse bars into a series of cells or compartments, each of which is provided wfth a spring, so that the several cells or sub-divisions may be filled with match cards with the greatest facility, the springs, as the cards are adjusted within the cells, retaining each individual card until the cells are all filled up, and the screws applied to them. The object of the invention is to facilitate the adjustment of match cards within the rack.]

COTTON GINS—Lewis S. Chichester, (assignor to Henry G. Evans,) of New York City : I claim the saws, C, in combination with the oscillating breast, D, the parts being constructed and arranged to operate substantially as and for the purpose set forth.

CANS FOR PRESERVING PAINTS—Edward Clark, (assignor to William H. Dolson,) of New York City : I claim attaching and securing the heads to the sheet metal body of the can or keg, by forming a projection, a, round the interior near each end of such body, in the manner described, for the heads to rest against, and turning the edges of the body over the heads after the insertion of the latter, substantially as set forth.

[The object of this invention is to close the heads of sheet metal cans or kegs sufficiently tight to enable them to contain paint or other substances, without the use of solder. Tho invention consists in forming a projection all around the interior of the body of the can, near the top and bottom thereof, by forming a groove round the interior, and dropping the heads on to these projections, and turning the edges of the body over them. In this way the heads may be tightly secured without solder, and the use of untinned sheet iron is permitted, and a sufficiently durable can or keg is produced at a far less cost than a tin can or wooden keg.]

COATING METALS—Selah Hiler, of Haverstraw, N. Y., (assignor to John M. Berrian and Cornelius A. Berrian,) of New York City : I do not claim heating the iron or steel to be coated with brass, copper, silver, or other metals or alloys of metals, to a white or welding heat, that having been done before.

But what I claim is the coating iron or steel with copper, silver or brass alloys, where silver or copper is used, by bringing the iron or steel, while in a melted state, into contact with the coating metal, and allowing them to so remain until the two metals have become hard by cooling, substantially as specified.

SPELLING BLOCK—Samuel L. Hill, (assignor to Albert Palmer and Sidney Doane,) of New York City : First, I claim the arrangement of letters on any number of six-sided blocks, in the manner described and for the purpose specified.

Second, I claim giving to and placing upon each block its proper numerical figure, for the purpose specified.

CORN ERADICATORS—Corydon Wheat, of Geneva, N. Y. : I claim the corn eradicator constructed as described, as an article of manufacture, substantially in the manner and for the purposes set forth.

HARVESTERS—John K. Harris, of Allensville, Ind. : I claim the rocking pinion, H, constructed substantially as set forth, with cogs p and p' adapted to yield, as explained when passing the ends of the wheel cogs, or on the backward motion of the drive wheel.

SEWING MACHINES—Warren Millar, (assignor to himself and John Nutt,) of Chicago, Ill. : I do not claim the combination of the rotating hook to extend the loops in the needle thread, with a reciprocating bobbin to carry the locking thread through the so-extended loops, as that is claimed in the patent of A. B. Wilson, Aug. 12, 1851.

Neither do I claim the driving of the reciprocating spool by means of a groove in a rotating hollow mandrel, into which the said spool passes, and which carries the rotating hook.

Nor do I claim placing the hook which takes the loop from the needle on the side of the ring opposite to that where the thread passes from the bobbin or thread case to the needle loop, when such bobbin or thread case is stationary or revolves with the hook, as such construction and arrangement of these devices are employed in the patent of E. Harry Smith, dated November 10th, 1857.

But I claim, first, the revolving hooked ring, constructed as described, when arranged and operating in combination with the needle and the reciprocating spool, carrying the locking thread, for the purpose specified.

Second, The loose ring, R, applied within the rotating two hooked ring, and operating in combination therewith, substantially as described, to produce a tension on the locking thread.

[The design of this invention is to avoid the necessity in sewing with two threads, to produce what is called the "interlocked" stitch, such as is formed by the needle and shuttle, of winding the thread that is used for locking the loops of the needle thread on to bobbins or into cops, and to use this thread in the machine from common spools, such as those on which it is generally sold. The invention consists principally in a rotating two-hooked ring of a peculiar construction, operating to extend the loops in the needle thread in combination with a reciprocating spool which supplies the locking thread through the ring and through the loops extended thereon. The invention also consists in the employment of a loose ring, applied and operating within a cavity in the rotating two-hooked ring, to produce the necessary tension on the locking thread; and in a certain means of giving motion to the several working parts of a machine in which these devices are employed.]

PUMPS—Henry W. Regan, of Cressona, Pa., assignor to himself and George H. Newer, of Harrisburg, Pa. : I claim combining with the water ways of a double acting pump, and air chambers divided by a partition, e, so that each of the water ways shall have its own air chamber, but the water from each to be transmitted into a common chamber, B, before its exit from the pump, substantially in the manner and for the purpose set forth.

BREECH-LOADING FIRE ARM—John P. Schenkl, of Worcester, Mass., assignor to himself and Edward A. Dana, of Boston, Mass. : I claim, in combination with the bore or chamber of a fire arm or piece of ordnance, a secondary and smaller fire arm or barrel arranged within it, substantially in manner and to operate as described.

I do not claim a conical tige, as used in the "carabine a tige," and for the purpose of spreading a ball.

But I claim the comical or tapering spreader or end of the tige, in connection or combination with the chamber within the tige, and to operate in the manner as specified.

I also claim the improvement of the chambered tige or secondary barrel, as made with a cutting front end, and particularly as made with a serrated end, as specified.

I also claim the arrangement of the touch-hole of the hollow tige in the breech screw thereof, in such manner that when the breech screw is in place in the main barrel, not only shall its touch-hole communicate with that of the main barrel, but the breech screw shall intercept all communication of the touch-hole of the main barrel with the bore or chamber of such main barrel, except through the touch-hole and bore of the secondary barrel.

I also claim the improved combination of tige that is with the base of the spreader, made of greater diameter than the neck or part of the tige which is immediately below it, the same being for the purpose as set forth.

SPADING MACHINES—Judd Stevens, (assignor to himself and John L. Beadle,) of Marengo, N. Y. : I claim jointing or hanging the spade, K, to the wheel, A, in such a manner, that in the forward motion of the machine, it will remain in proximity with the periphery of the wheel until the lifting of the earth commences, when it shall pass outwards, or slide upon its bearing, thereby acting more efficiently to raise and disintegrate the soil, substantially in the manner and for the purpose set forth.

I also claim the combination and arrangement of the tripping lever, H, with the spade, b, substantially as and for the purpose described.

RE-ISSUES.

CHAIRS—James Fernald, of Boston, Mass. Dated July 22, 1856 : I claim the new manufacture of chair backs, composed of a convex-faced solid block of wood, D, and a single metallic support rod, C, they being constructed and applied together, and to the chair seat, essentially as specified.

And I also claim making the back rest, D, oblong or oval, when made to rotate, in the manner and for the purpose, as specified.

BOLTING FLOUR—Edward Broadfield, of Rochester, N. Y. Dated Sept. 1846 : I claim, first, the cast heads or annular rings, C C, with the flange and hubs substantially as described, or any mechanical equivalent, therefore, when used in connection with wire cylinder or circular wire bolt.

Second, In combination with the chain, 1, the cylindrical journals, a a, or their equivalents, by means of which the bolt revolves in or on a support inside the space for admitting the feed, instead of on the outside, as in the English bolt.

Third, The combination of the cards or metal points, d, and brushes, e, attached to bars, b, of the inside cylinder, for the purpose set forth.

Fourth, The spout, P P, when arranged in relation to the cylinder or bolt, A, and used in connection with said cylinder or bolt, A, and the inside brush cylinder, as and for the purpose specified.

[The object of this invention is to prevent, by a simple means, the gaze cloth of the screen or bolt from becoming choked or clogged, a contingency of frequent occurrence in the original machines for bolting and dusting; also by a novel construction and arrangement of parts to render the machine far more efficient in its operation than usual, and much more durable.]

SEWING MACHINES—The Grover and Baker Sewing Machine Company, of Boston, Mass., assignors of Shelburne C. Bloodgett, of Georgetown, Mass. Dated Dec. 20, 1853 : I claim the formation of sewing in cloth or other material, by the interlooping of two threads by the conjoint action of two needles, in such manner that each needle shall be made to carry a loop of thread through a loop formed by the other needle and through the cloth, whereby one thread serves as a binding thread to the other, substantially in the manner described.

I also claim moving the cloth to be sewed by a needle or its equivalent, operating substantially as herein set forth, to pierce the cloth and move it the necessary distance required to form successive stitches.

DESIGN.

CAST-IRON FIRE SHOVELS—William Bennett, of New York City,

EXTENSIONS.

METHOD OF RENDERING LARD—Ebenezer Wilson, of Cincinnati, Ohio. Patent dated Oct. 9, 1844. Reissued May 7, 1850. Extended Oct. 7, 1858 : I claim in the described apparatus for extracting or rendering lard, &c., by the action of high pressure steam, combining with a steam-tight tank, substantially as described, and provided with one or more discharge holes, for the discharge of the residum, and with a perforated steam-pipe at the bottom for the introduction of high pressure steam, a perforated false bottom above the steam-pipe to sustain the charge under the weight and pressure, substantially as described, to admit of an t insure free passage of the steam through the charge, and also the free descent of the water of condensation, as described.

I also claim, in combination with the tank, substantially such as herein described, the employment of one or more try cocks near the top thereof, and a regular discharge cock at or near the bottom, substantially as herein described, for the purpose of ascertaining when too much water of condensation has accumulated, and to discharge the same, to retain a sufficient space above for steam to insure the passage of steam through the charge, as described.

And, finally, I claim, in combination with a tank, substantially such as herein described, and for the purpose specified, the employment of a series of discharge cocks, arranged at different levels, substantially as described, for the purpose of drawing off the rendered lard, &c., as it floats on the water of condensation, and thus insure the separation of the pure lard, &c., formally foreign substances, when this is combined with the relief or discharge cock, all substantially as described.

STEAM BOILERS—Frederick E. Sickles, of New York City. Patent dated Oct. 19, 1844. Extended Oct. 8, 1858 : I claim, first, my improvement in the periods of the movements of the valves, by which they are opened and closed relatively to each other, and to the movement of the piston, by means of which the piston completes each stroke in equilibrio, or nearly so, without admitting steam against the movement of the piston, by a lead to the steam valve, which is effected as before stated, by opening the lower exhaust valve, before the end of the upward stroke of the piston and before the upper exhaust valve is closed, and opening the upper exhaust valve before the end of the downward stroke of the piston, and before the lower exhaust-valve is closed; the movement of the steam-valves being so regulated as to admit steam to the cylinder, only after the exhaust-valve on the corresponding end of the cylinder has been closed.

I also claim, as my next improvement, as a means of carrying into effect my first and essential improvement, the arrangement of the toes on the rock-shaft in such manner, relatively to the location and forming of the feet on the lifting rods, that at the middle or nearly so of the rocking motion of the rock-shaft, both lifting rods, with their exhaust-valves, shall be partly up, as described.

And I also claim, in combination with this arrangement, the slip of the lifters on the steam valve-stems, as described, to ensure the closing of the exhaust-valves before the opening of the steam-valves on the corresponding ends of the cylinder, as described.

© 1858 SCIENTIFIC AMERICAN, INC.

# New Inventions.

### Collision Preventer.

The latest new idea for preventing the sad effects of collisions on railroads is to have a track laid across the tops of the cars, with inclined tracks upon long cow-catchers placed at the front and rear of the train. The approaching train upon the same track, moving in whichever direction, instead of coming in collision, would run up the inclined tracks, pass safely over the tops of the cars that stood in the way and down upon the main track again, all in the twinkling of an eye. Mr. W. L. Pursall, of New York City, is the originator of the above happy contrivance.

### Waterproof Transparent Photographs.

It is a well-known fact, says the London *Times*, that photographs on paper are, after a certain time, dimmed by a kind of colored film, which is sometimes formed on the surface, and sometimes in the texture of the paper itself. M. Gandinet, in a paper presented to the Academy of Sciences, obviates this inconveniences by rendering the paper waterproof before exposing it to the action of the sun. His process is as follows:—Having dissolved a certain quantity of gutta percha in benzole, the solution is decanted, after a few day's rest, to obtain it clear. Sheets of paper are then dipped into it, one by one, and immediately taken out again, and hung up by one of their corners to dry. These sheets are afterwards found to be covered with a kind of what may be termed powder of gutta percha, there not being sufficient adhesion to give it the quality of a varnish. To obtain this, the sheets are exposed to the action of a good fire, which makes the particles of gutta percha glue together, covering all the fibers of the paper, which thus becomes waterproof without losing its transparency. The paper then receives a solution of albumen (albumen, 100 parts; water, 25; chloride of sodium, 6), which is allowed to dry, and then rendered sensible to light by a solution of crystallized nitrate of silver of the strength of 15 per cent. The rest of the operation is quite the same as usual, only shorter, the photograph being fixed in a few minutes; the washing, which generally lasts from 12 to 24 hours, is reduced to a quarter of an hour. The photograph obtained is transparent, and the paper retains its former whiteness.

### New Signal Lantern.

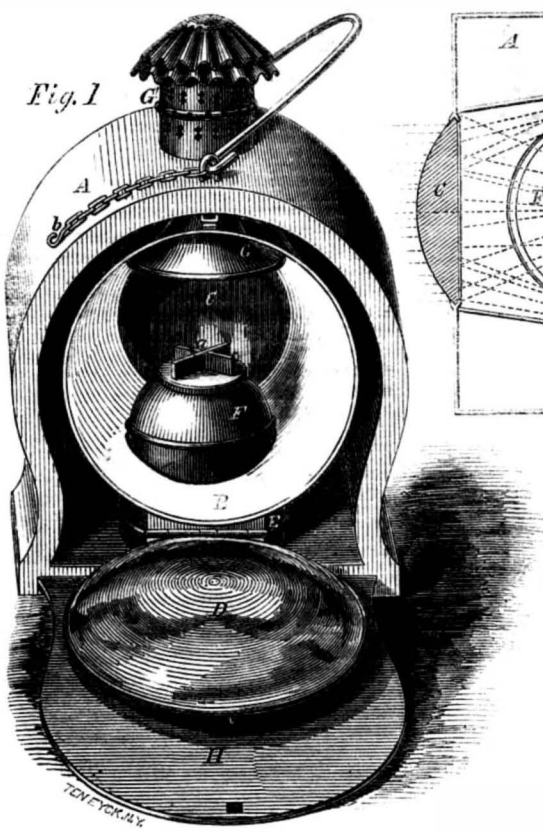
One of the most important requisites for a locomotive, steamboat or signal lantern is, that it shall throw the luminous rays emitted by the lamp to a great distance, and it has been found that the more concentrated these rays are the further they are visible. It is therefore highly desirable that a lantern should be constructed, which, instead of diffusing the light, would throw a column or bundle of rays in a concentrated form, and thus penetrate the surrounding darkness for a great distance. By the arrangement of reflectors in the subject of our engraving, such a concentration is effected, and we will now proceed to describe this lantern, the invention of Wm. Howard, Flushing, L. I.

Fig. 1 is a perspective view of the device, with the door and back reflector open to show the interior.

A is an ordinary lantern, inside which is a conical shaped reflector, B, having at its narrowest end a plano-convex lens, C, and at its broadest part a convex reflector, D, which can open and shut as a door to light the lamp. This reflector is supported on a perforated stand, E, through the center of which rises a pin, *c* (Fig. 3, which is a section of the lamp), and on this is supported the lamp, F, by a hollow cone, *f*, so that it can swing, and always maintain its perpendicular in any position of the lantern, and also obviates the necessity of gimbal rings, which are generally employed for the same purpose, but as they obstruct the light of the lamp passing to the lens, they are objectionable. The lamp passes through a hole in the reflector, B, through which there is also room to admit air to feed the lamp whose wick tube, *a*, is placed in the form of a cross in order that a great amount of light may be obtained from a small lamp. The products of combustion pass through a funnel, G, to a chimney, G′, and all the parts inside which the light touches are plated. The door of the lantern, H, is kept closed by a chain and hook, *b*. Fig. 2 is an horizontal section of the lantern above the lamp and shows the shape of the reflector, which, from its conformation, collects the rays of light from the lamp, and throws them in a very condensed form upon the lens which sends them forth in all their intensity and brightness to illumine the darkness for a great distance.

This form of reflector is entirely new, and has been found to give a very superior light to any of the signal lanterns now in use, far exceeding them in the distance which it can be seen by an observer, rendering it therefore especially applicable for all uses where this is the purpose of the light. It was patented June 2, 1858, and any further particulars can be obtained by addressing the inventor and patentee, W. E. Howard, as above.

**HOWARD'S SIGNAL LANTERN.**



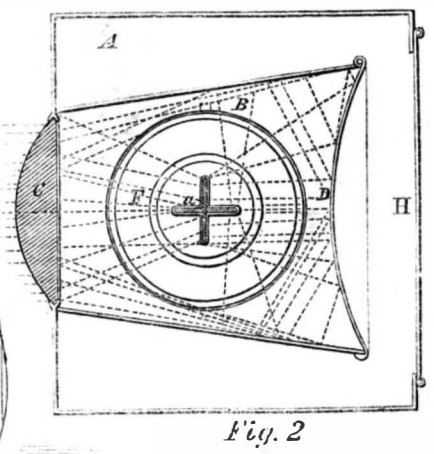




Fig. 2

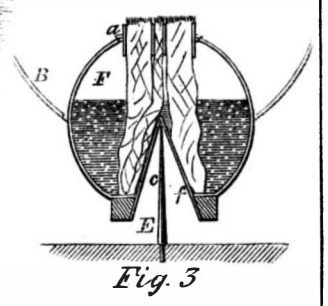
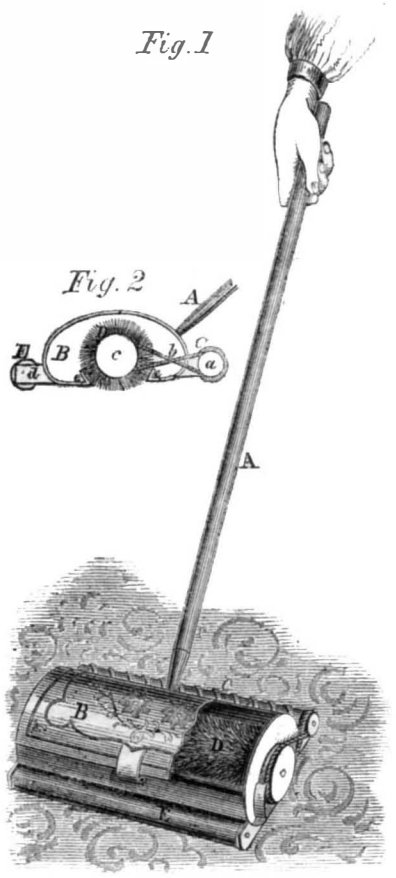



Fig. 3

### Shaler's Carpet Sweeper.




A pleasant feature in the character of man is the love of home, and it is creditable to the genius of inventors that while the steam engine and electric telegraphs have engaged their attention, home wants have not been forgotten. We have an illustration of this in the invention we are about to describe—a carpet sweeper—which substitutes an elegant little contrivance requiring no more labor than a few walks up and down the room for what is now, a laborious dusty operation.

Fig. 1 is a perspective view, and Fig. 2 a section of the device, which is the invention of R. Shaler, of Madison, Conn., and was patented by him Sept. 7, 1858.

A handle, A, has a box, B, attached to its lower end; at the rear of the box and parallel with it is placed a roller, C, with a band of rubber run spirally around it. On the end of C is a small pulley, *a*, around which an endless band passes, connecting is to another larger pulley, *c*, on the shaft of a circular brush, D, in the box, B; there is also a roller, E, in front of the box, and connected with it by means of its bearings, *d*, similarily to the bearings of C. The box has a hinged top, so that the dust can be removed from it, and it is turned back as seen at *e* to prevent the dust escaping when brought in by the brush.

The operation is simple and perfect. The box is placed on the carpet, and moves either backward or forward, it matters not which, the rubber spiral "bites" on the carpet and the roller is rotated, and by the endless band and pulleys it rotates the brush, the bristles of which entering into the pile of the carpet give it a thorough brushing and deposits the dust, pieces of paper or bits, in the box without raising the cloud of dust that is the usual accompaniment of carpet sweeping.

To the excellence of this device we can personally testify, and we have no doubt that it will be hailed with gladness by many a housekeeper as one of the most useful additions to home labor-saving machines that has yet been made.

Any information concerning the invention can be obtained by addressing Shaler's Patent Carpet Sweeper Company, 69 Fulton street, New York.

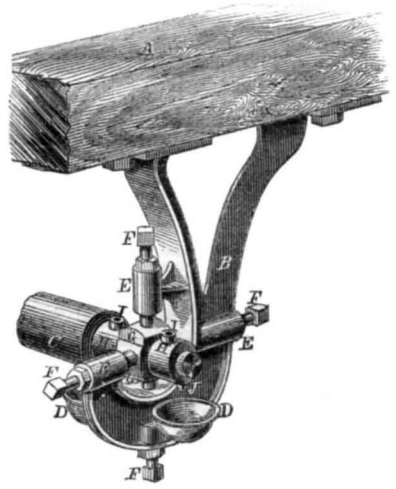
### Tallow Candles.

Palmer's tallow candles, which require no snuffing, are made in England, and not in this country, so far as we know. One-third of the wick is first impregnated with sub-nitrate of bismuth ground up with oil, the whole is then bound round in the manner called "gimping;" one, two, or more of these wicks are wound round a thin rod in a spiral manner, and placed in the center of the mold, which is then filled with tallow, and when the tallow cools, the rod is withdrawn. On burning these candles the wicks uncurl, and form so many separate flames, and the ends coming into contact with the air at the edge of the flame, are consumed.

### Johnson's Adjustable Hanger for Shafting

The shafting of mills has to be supported in close contiguity with the roof, and often, from its great length, it is subject to vibration, the result of its rapid motion, which throws it somewhat out of a true right line, and if its journal box be rigid, it becomes soon uneven, and wears the shaft itself quickly; in fact, the use of rigid hanging bearings is attended by so many inconveniences that a remedy in the shape of an adjustable hanger has long been wanted.

The subject of our illustration is an adjustable hanger constructed on the principle of the universal joint, which allows and accommodates any of the positions which a shaft may take in its vibration; always keeping the bearing in a right line with the shaft, thus diminishing friction, and also affording support to a shaft passing through it at any angle. The following description will explain the invention:—A is a roof, beam or any piece to which the hanger, B, can be secured. C is the shaft passing through the box, H, which has two holes, I, in it, for the purposes of lubrication and the oil which leaks from the box is directed by a lip, J, into the cups, D,




cast with the hanger, so that there is no dripping of the oil. The box is rounded at the exterior of its surface, G, and these rounded surfaces are placed with the curves of the two sides, at right angles with the top and bottom, and the box is supported by screw pins, F, passing through collars or extended nuts, E, which press against the curved faces of the box. By screwing these tight, it can be made rigid and fixed, and by slightly loosening them the box is allowed free play in all directions, thus making it a perfect self-adjusting bearing, suitable for all cases where a shaft has to be supported from the roof of the building or room in which the power is required.

It is the invention of William Johnson, of Lambertville, N. J., who will be happy to afford any further information concerning the device. It was patented June 15, 1858, and one of them was on exhibition at the Crystal Palace at the time of its destruction.

CORRECTION.—On page 40 of the present volume of the SCIENTIFIC AMERICAN, in our description of Hawley's Rotative Planter, we make Mr. R. N. Hawley reside at New Haven, Conn. This is a mistake, as his abode is at Hawleyville in the same State, and the date of the patent is 1858 not 1857.

© 1858 SCIENTIFIC AMERICAN, INC.

Scientific American.

NEW YORK, OCTOBER 23, 1858.

### The Preservation of Life at Sea.

In our last issue, we directed attention to the important subject of "Fires on Land and Sea," and discussed the inquiry, "What can be done to suppress them?" We now wish to direct attention to some of the agencies that may and ought to be employed in the saving of life in all future cases of marine disaster.

The first and main consideration for the safety of life at sea should be the proper construction and management of the ship itself; it is always a desperate resort when other means of safety are required, nevertheless all experience justifies the necessity and wisdom of providing for every possible contingency. We are confident that there is not a single vessel navigating river, lake or sea, at the present moment, which is amply provided with well-known safety apparatus; indeed, it is a startling fact that our very best steamers are sadly deficient in such equipments. Take the case of the steamship *City of Baltimore*, on her recent voyage. While coming up New York bay, a man was blown overboard by the premature discharge of a cannon while firing a salute, and so defective were the arrangements for lowering the life-boat that ten minutes elapsed before this was effected, during which period the unfortunate gunner had floated a mile to the stern, and was afterwards taken up dead. During these ten minutes of suspense, when twenty men were fumbling at the boat, not a life-buoy could be found to throw overboard. The same incompleteness of arrangements characterize nearly all of what are called "crack steamers." A great number of safety devices can be provided for every vessel, not one of which should be omitted in any case. Thus, every mattress may be rendered an effective life-preserver; an illustration of one will be found on page 284, Vol. IV. of the SCIENTIFIC AMERICAN. We have seen one of them employed as a boat, and it answered a good purpose. Any common mattress, if enveloped in india-rubber cloth, will float one one or two persons in the water. Besides this, patents have been secured for constructing tables, chairs, stools, berths, doors, partitions and buckets of ships, so as to render them effective life-preservers; some of these articles being convertible into rafts, capable of saving a large number of passengers.

But while we urge these considerations upon the owners of vessels, we would fail in our duty did we not as strongly press the matter upon the attention of every person who intends taking a voyage to sea, or a journey upon our rivers and lakes. Passengers should also provide some means of safety for themselves; and among the great variety of articles which have been invented—we are always compelled to acknowledge the Inventor—are valises made of india-rubber or oil-cloth, and provided with cells capable of being inflated. Coats, hats, vests, pantaloons, shirts, bands, all curiously contrived with air tubes or bags, ready in a moment to do all possible service in sustaining the unfortunate one who but for these appliances would speedily sink to rise no more. Among all these the india-rubber dress described on page 34, Vol. IV. of the SCIENTIFIC AMERICAN, is perhaps the most effective.

Let any one go on board of even the best regulated steam and sailing vessels used in the transportation of precious human freight, and inspect critically the probable chances of escape in case of fire or shipwreck, and we are satisfied a conviction of "false security" will be clearly manifest. Nothing comparatively is done in a practical way to meet danger until its horrid realities stare the imperiled ones in the face. Is it possible that owners and commanders of vessels will still go on regardless of such provisions as are required to meet emergencies? Is it possible that passengers will not profit by the suggestions herein made? Shall we not profit by the bitter and agonizing experience which comes home to our hearts in the tales of horror and distress of those passengers on the ill-fated *Austria*? If owners of vessels will so neglect their duties, the government ought to take the matter in hand, and enforce some stringent measures that will compel them to adopt all needed life-preserving agencies.

We are happy to state the fact that forty-two more passengers saved from the burned steamship *Austria*, arrived at this port on the 14th inst., in the British war steamer *Valorous*, from Fayal, where they had been taken by the French brig *Maurice*.

### Glass Grinding and Polishing.—Another Triumph of American Inventors.

In 1854, Albert Broughton, of Malone, Franklin co., N. Y., obtained Letters Patent of the United States for a machine designed for polishing stone, and it occurred to the practical mind of Albert Lindsay, of the same place, that the same machine would answer a good purpose for polishing glass, and upon applying it for this purpose it succeeded beyond their most sanguine expectations. This result induced Messrs. Lindsay & Broughton to take measures to secure foreign patents, and in 1856, Mr. Lindsay visited England and France, for the purpose of bringing this important invention before the plate glass manufacturers. It arrested the attention of the celebrated British Plate Glass Co., at St. Helen's—the oldest, and one of the wealthiest concerns in England. Its operation at a specific trial was so satisfactory, that it led to the purchase of the right for a very large sum. But this machine was only adapted to small plates; and soon after Mr. Lindsay's return home, he devoted himself to render it efficient for larger plates. In this he was successful; and in July last he re-visited Europe, and according to the provisions of a contract stipulating for any subsequent improvement that might be made, he tendered the improvement to the company. Its operations have given so much satisfaction that it is intended to supersede the whole of the glass-grinding machinery in use. Previous to the introduction of this machine, the company referred to employed one hundred hands in polishing, and now require but ten; and instead of 2,500 pounds of emery per week, costing from $90 to $100, only 500 pounds are now required to perform the same amount of work.

Who could have imagined that a machine invented away up in Malone, N. Y., would one day revolutionize the entire art of grinding and polishing glass in England? This is one of the many instances of the success of American inventions abroad, to the benefit of both parties—the patentees and assignees. The patent secured for Messrs. Lindsay & Broughton through our agency, received a thorough legal investigation before the company would take it, thus showing the vast importance of the utmost care and experience in the management of foreign patent cases.

Messrs. Lindsay & Broughton, in a letter addressed to us on the 12th inst., state that their inventions have been very valuable to them, and allude, in terms of grateful approbation, to our success in the management of their American and European cases. It is probable they will realize more than $100,000 from their European patents alone. How vastly important then that all inventors who design to take out British patents should intrust their cases to agents of known integrity and responsibility.

METEOR.—A remarkable meteor, apparently one-third the size of the moon, was observed at the Toronto Magnetic Observatory a few evenings since. Its form was pear-shaped, and it burst when at an elevation of twelve degrees above the horizon.

### The Leviathan Steamship.

This giant of the seas, which has caused so much speculation, expense, and anxiety, has been in a stand-still condition for some time. It was expected at one period that she would be all ready for sea this autumn, and that the first voyage would be taken to some American port, probably Portland, Me., but at present it is not possible to predict when she will be ready, or what will be her future destination. The cost for her construction having far exceeded the original estimates, and all the funds having been used up, the stockholders did not feel inclined to increase their contributions, hence the delay in completing this great steamer. It is now proposed to form a new company, with a capital sufficient to purchase out the old one, and to finish her at an early date. It is stated that, when completed, she will be able to make eight voyages per annum between London and Portland, and pay a handsome profit.

Rumors have also been circulated that the Emperor of France wishes to purchase the *Great Eastern* for his navy, and some fears are entertained in England that he may accomplish his object. It has been urged upon the British government to step in and make the purchase for the royal navy. Louis Napoleon is a long-headed genius, and if he can secure the *Great Eastern*, he might laugh at the power of the whole British navy, because this monster steamer could run down the whole of the largest steamers in any other fleet, one after another, without firing a single shot. We hope that some energetic measures will soon be carried out to complete this noble steamer. The results of such a grand experiment will be looked for with anxiety and interest.

### New Cigar Boat.

We have recently received more information respecting the curious steamer now being completed at Baltimore, Md., by Messrs. Winans, the distinguished locomotive engineers. The hull is of the form of an immense cigar, 180 feet long, and 16 feet in diameter, without keel or flat deck, and is built very strong, for the purpose of being driven through the waves. She is to have neither masts nor spars, and the only thing to be visible above deck is the smoke-stack and ventilator. She is to have four high-pressure locomotive engines, which are to drive a propeller amidships. Every part of the vessel is to be of iron, well braced, and so divided into water-tight compartments as to be a life-preserver. It is expected to be ready in six weeks, and to make her first trip to this city, thence to Liverpool. We remember a steamboat that was built by Mr. Burden, in 1837 or '38, in Troy, N. Y., having two huge cigars for the hull, and the decks situated above these. It was expected to run very fast, but we believe it made but one trip, and was stranded on some of the flats up the Hudson river. Messrs. Winans' steamer is undoubtedly different in principle, but from its form it must roll awfully in a heavy sea. It is a mistake to suppose that it will sail through the waves smoothly. We think it will be perfectly unmanageable.

### Pacific Stage Route.

Overland regular mail communication has been established between St. Louis and San Francisco. The first mail arrived on the 9th inst. in twenty-three days from the shores of Pacific, and it was the occasion of general rejoicings in St. Louis. In answer to a telegraphic message announcing the result, President Buchanan says:—"It is a glorious triumph for civilization and the Union. Settlements will soon follow the course of the road, and the East and the West will be bound together by a chain of living Americans which can never be broken."

The electricians are entirely at a loss to account for the stoppage of the Atlantic cable, and much anxiety is manifested concerning it both here and in England.

### The American Institute and its Exhibitors.

Since the destruction of the Crystal Palace, and the consequent abrupt termination of the Fair of the American Institute, by which the hopes and expectations of many worthy inventors and exhibitors have been blasted, a bitter opposition has sprung up against the Managers of the Institute on the part of the exhibitors, which has led to several spirited meetings of the latter, with a view to an independent organization, and, if possible, the opening of another Fair, this season. Several prominent citizens and inventors have become identified with the movement, and, if we can "take the will for the deed," something is likely to come out of it.

It was our intention to have made some more extended remarks in reference to the above subject; but at the time of our going to press, no definite announcement had been published. We are apprehensive, however, that, owing to the lateness of the season, and the fact that, out of the three thousand exhibitors, comparatively only a few are participants in this new movement, no other Fair will be held this year.

### Nickel and Iron.

From the observation of the fact that meteoric iron is possessed of greater hardness and tenacity than the ordinary iron, it was thought by W. Fairbairn, F.R.S., that this property was due to the presence of nickel, which is found in all meteorolites. He has, therefore, recently been trying some experiments to test the fact. The nickel was combined with the iron in the same proportion as analysis had demonstrated that it had existed in a stone which had dropped from the clouds, and it was found that instead of increasing, it *decreased* the strength of the cast iron 17 per cent. He concludes his account of the experiments by remarking that he had conceived the idea that such an alloy would be most excellently adapted for large cannon and mortars, but that to resist the action of gunpowder there is nothing so good as the best and purest cast iron, and the more free from sulphur, phosphorus, or alloys, the better will it resist the violence of the explosion. The effect of nickel with malleable iron would, however, be as Mr. Fairbairn expected, namely, an increase of toughness, for carbon, phosphorus, and sulphur, which so much deteriorate the quality of cast iron, in small quantities improve that of malleable, and it is not at all improbable that nickel would have the same effect. Some of our American iron men should try the experiment and publish the result, as it would be an interesting addition to our knowledge of iron.

### Buckwheat as Food.

M. Isidore Pierre has recently been making some investigations on buckwheat, from which we condense the following interesting results:—Buckwheat cakes are equal to pure white bread as regards the phosphates or bone-making material, and nitrogenous principles which they contain, and are superior to bread in fatty matters. The general yield of buckwheat when cooked is about three times the weight of the flour used, showing that such flour will retain forty to forty-one per cent of water. Between different batches of ground buckwheat there is a great dissimilarity of composition—one batch containing nearly seven times as much nitrogen, twenty-five times the amount of phosphates, and a hundred and fifteen times as much fatty matter, as another. The bran is the richest portion of the buckwheat, but cannot be digested by weak stomachs. The finest qualities of buckwheat flour, and the white mill dust especially, are very suitable for children and persons in delicate health, while the coarser varieties require a strong stomach and much exercise for their perfect digestion.

We are indebted to Mr. J. F. Feeks, California news-agent, No. 18 Ann street, this city, for prompt delivery of files of papers from the Golden State.

© 1858 SCIENTIFIC AMERICAN, INC.

### The Atlantic Cable and Telegraph Conductors.

MESSRS. EDITORS—It would be convenient to have some definite unit of electric resistance as a universal standard. Some physicists have proposed for this standard a round wire of pure copper one meter in length, and one millimeter in diameter. The meter is a French measure a little longer than our yard-stick—about 39·38 inches—and the millimeter is equal to the thousandth part of a foot—·03938 inches. We may correctly assert that the resistance which such a wire offers to the passage of an electric current is equal to unity. If R denotes the resistance of the wire, we express its value thus, R=1. Several other standards have been proposed and employed in different investigations, but for our purpose it may be more convenient to employ as a standard unit of resistance, one mile of No. 9 iron wire—this wire being in most common use for telegraph purposes. Our unit then will be 5280×0·148 inches (the diameter) of Washburn's best telegraph wire. It will be necessary for us to ascertain how to compare one unit with another, and also one conductor with another. It has been ascertained that the resistance which a body opposes to the passage of a uniform current of electricity is directly proportional to its length, to its specific resistance, and inversely to the magnitude of its cross section. Hence if $l$ denote the length of a conductor, $s$ its specific resistance (that of copper being unity), and $c$ the area of its cross section, its resistance may be expressed thus: $R=l\,s\div c$. We will consider lengths $l$, expressed in feet, and diameters, D, to represent inches. To compare the iron unit with the copper unit, let us designate by R the total resistance offered by the copper standard, and by R′ that offered by the iron. Let $l$ be the length of the copper in feet=3·28; and $l'$ that of the iron=5280; $s$=1 the specific resistance of copper; and $s'$=5·625, that of iron; D=·03938 inches, the diameter of the copper, and D′=·148 inches, the diameter of the iron. Then the expressions $R=l\,s\div D^2$, and $R'=l'\,s'\div D^2$ will represent the resistances of the two conductors—the one a copper, and the other an iron wire. The expressions $R'\div R$ will also show how many times the copper unit is contained in the iron. It is equal to $l'\,s'\div D^2\times D^2\div l\,s$, or in numbers thus: $(5280\times5{\cdot}625\times{\cdot}00155)\div({\cdot}021904\times3{\cdot}28\times1)=640{\cdot}75$ the number of times the copper unit is contained in the iron one. This amounts to saying that one mile of No. 9 iron wire offers as much resistance to the passage of an electric current as do 641 meters of No. 19½ copper wire.

We will now endeavor to obtain some idea of the length of the Atlantic Cable, and the resistance which it offers to the passage of an electric current, as measured by our iron unit of one mile of No. 9 wire. The length of cable actually laid is about 2,333 miles, or 12,318,240 feet. The diameter of each of the seven conducting wires in the cable is ·0293 inches. By calculation it appears that 5,280 feet (one mile) of our overland telegraph conductors offers as much resistance to the passage of the electric current as 8,150 feet of the copper conductor of the Atlantic Cable. As the 12,318,240 feet in the cable conductor contains 8,150 about 1,510 times, the total resistance in the cable wire of 2,333 miles is only equal to that in 1,510 miles of a land line. Were it not for the phenomena of retardation by lateral *induction* in the cable, we might be able to work through it with a battery for 1,510 miles on land, and even with less than this, if the insulation of the cable were better. 100 cups or pairs of Smee's battery suffice to work from Boston to New York (200 miles); therefore a battery of 600 cups should work through the cable. It was found, however, that 240 cups transmitted signals perfectly through the cable while it was being paid out, thus proving that its insulation at that period was superior to that of land lines, or that the indicating instruments employed were more sensitive than those in common use.

When the line of telegraph was first opened from Burlington, Vt., to Boston, Mass., signals were distinctly received from a sand battery of 36 pairs of plates, which would be equal to about 194 pairs for the cable. Signals have been received in Boston from Calais, Me., with even a less amount of battery force than 36 pairs of plates. The circuit of the cable is completed by connecting the instruments at each end with the earth. The usual way to do this is to attach a wire to a plate of copper, and bury it in the ground. This might also be accomplished by making a connection from the instruments to the sheathing of the cable, which is composed of 126 No. 21 iron wires wound spirally. These wires offer themselves as a conductor, and so does the salt water of the ocean. In comparing the resistance of this sheathing with No. 9 iron wire, it would be equal, for completing the circuit, to 418 miles of a land line. But even if we assume the specific resistance of the sea water to be 25,000,000 (pure water would be 79,000,000), and the average depth two miles, its total resistance will only be equal to 58 feet of No. 9 iron wire. It is, therefore, easy to conclude that the electric circuit is completed through the earth and sea, and that in this respect no advantage would be secured by having, as some have proposed, a separate wire to complete the circuit. * * *

Boston, Mass., October, 1858.

### The Patent Office Building.

During the past two or three months, says the Washington *Union*, great changes have been taking place, both in this building itself and its contents. The north wing is steadily progressing, being now up to the third story, and built in a most substantial manner. The exterior wall on G street is of marble, while the rear one is of granite. The west wing is occupied, in the first and second stories, by the clerks of the General Land Office; and there not being accommodations sufficient for them, the rooms heretofore occupied by the rejected models belonging to the Patent Office have been emptied of their contents, and are now being cleaned up and fitted for the use of the Land Office. Those rejected models have been carried up stairs and placed in the cases which were formerly filled with the curiosities brought home by the exploring expedition, &c.—the latter having been removed to the Smithsonian Institution. But these cases are inadequate to contain this vast multitude of rejected models; and besides being filled to repletion, a large number are piled in heaps on the tops of the cases, and still the number increases. The inventive genius of our countrymen grows more and more prolific, and in spite of the large number of patents which are issued weekly, a great many applications are weekly rejected. The hall in the west wing is now in course of preparation to receive rejected models. There are nearly a hundred cases erected, of large size, and capable of holding many thousands of models, and this hall, which extends the whole length of the wing, will be exclusively devoted to the proper arrangement and exhibition of these models. While they were in the basement they could only be seen with great difficulty, as it was dark, and they were piled together indiscriminately, and the dampness of the place was also unfavorable to their preservation; but now they may be seen to better advantage, and an hour or two may be pleasantly and profitably spent in this manner. Among these models are patterns of all sorts of machinery; beehives of a great variety of shapes; churns, cider-mills and cheese presses; rat traps, by which the Examiners were not to be caught; pistols, pumps and paddle wheels; stoves, steam boilers and steering apparatus of every description; improvements in household furniture and in coffins, in bridges, fences, and gates, in steam engines and water filters. In one case may be seen all the varieties of lamps and lanterns that would seem capable of being devised by human ingenuity; and in another are galvanic batteries and magnetic telegraphs, calculating machines, an instrument for indicating the depth of water, a self-adjusting climatometer, and a self-adjusting quadrant. It is almost painful to think of the many weary hours of toil and sleepless nights of study to which this mass of inventions owed its parentage; and all for nought. They were weighed and found wanting; they would not stand the test, and were thrown among the rubbish in the basement of this building, to be at this late day brought to light and to furnish food for reflection to thinking men. Some of these models which we observed bore the date of 1838, having been in the office for twenty years, but the greater part have been collected within the last four or five years.

Among the other curiosities in this gallery is a case of Chinese models from Hong Kong, consisting of mills, water wheels, plows and harrows, and presented by Lieut. Gillis, of the United States navy. There is an appropriateness in placing them here, for we do not believe a patent could be obtained for any of them, and they therefore belong among the rejected models.

Another case contains a town clock, made by the late Wm. Voss, of Washington. This is a beautiful piece of machinery; and can be placed upon any tower or building intended for such a purpose, and made to strike the hours or quarter hours (if desired) on a bell so as to be heard all over the city. The nature of the works will admit of from one to four dials, and will show the hour upon all of them. The price of this clock is eight hundred dollars. We have often heard the complaint that there is no town clock in Washington. Let this be said no longer, for there is one, and it is to be found among the rejected models. There it stands, mute and motionless, yet how suggestive. Another model, the first one which strikes the eye of the visitor on entering the hall, is that of the Washington monument. This also suggests a train of thought, which we will leave our readers to follow out.

### Plowing by Steam.

The "iron horse" seems to be gradually claiming the attention of farmers, for the purpose of tilling the soil. The State Board of Agriculture in Illinois has offered a premium of $5,000, for the best steam plow; and a trial for this prize is to take place at Grand Prairie, some time this month. Three plows are entered for competition, and one has already made its appearance in the Prairie State. This is that of Mr. Wm. Fawks, of Christiana, Pa., built on the locomotive principle, and capable of turning six deep furrows at one operation. It was tried at the State Fair, held at Centralia (Ill.), on the 16th ult., and gave very general satisfaction.

The Royal Agricultural Society of England has recently awarded a prize of $2,500 to Mr. H. Fowler, for the most efficient steam plow. It has a stationary engine, using warping ropes to drag the shares through the furrows. Mr. Mechi, the celebrated English farmer, uses one of these plows; and its cultivation of the soil is very superior—the yield of wheat having been increased eight bushels per acre by its use. There are twenty tenant farmers in England who now cultivate with steam, and the saving is about one-fourth of the cost, in comparison with horses. Where fuel is abundant and cheap, we have no doubt that in twenty years hence, steam plows will be in common use in our great Western prairies.

Messrs. Newall & Co., of London, have taken a contract with the Turkish Government for laying down a telegraphic cable between Cape Hellas and Alexandria. By this cable England will be brought in immediate telegraphic communication with the latter city, from which a land line is to be laid to Aden, and carried through the Red Sea and Persian Gulf to India.

## Notes and Queries

*** PERSONS who write to us, expecting replies through this column, and those who may desire to make contributions to it of brief interesting facts, must always observe the strict rule, viz., to furnish their names, otherwise we cannot place confidence in their communications.

J. K. S., of Crooked Hill.—The mineral you sent us to examine is iron ore. It would make a very good paint, or might pay well for smelting. This, however, would depend on contingencies upon which we can venture no advice.

R. G. C., of Ky.—We are well aware that when atmospheric air is mixed with common coal gas, it depreciates its brilliancy when burning. An equal volume of air reduces its luminosity one-half. But this is not due, as you suppose, to the nitrogen of the air combining with the hydrogen of the gas, as nitrogen is perfectly inert. The cause of this is due to a greater quantity of oxygen being supplied to the carbon and hydrogen of the gas, whereby their combustion takes place simultaneously, thus preventing the solid particles of carbon from reflecting the light. This accounts for gas mixed with air giving out more heat than when burned in the common method.

G. H. T., of Mass.—Some self-sealing air-tight cans do not require to be soldered. Their lids, when screwed down, are air-tight.

T. A. D., of Mo.—An electrical machine cannot be made to draw off the induced electricity in the Atlantic Cable any faster than a common telegraph apparatus.

ADHESION—The adhesion between the surface of water and any body resting upon it may be easily measured; and it has been found that a plate of copper having an area of seven inches requires 1,000 grains over its own weight to raise it, or overcome the adhesion of the water.

T. M. C., of Me.—Your fall of water is eight feet, and the area of the discharge opening is a square foot, therefore the water power will be nearly 16-horse; but as you use an inclined penstock 60 rods in length, we would allow about one per cent less for its friction. This you will find to be about the ratio, if the penstock is smooth inside.

BAD COMPANY is like a nail driven into a post, which, after the first or second blow, may be drawn out with little difficulty; but being once driven up to the head, the pincers cannot take hold to draw it out; it can only be done by the destruction of the wood.

CARPET LININGS are now very much used for the purpose of protecting the fabric from being rapidly worn out by contact with seams and rough places in floors. By its use also the most common carpets are made to feel as soft to the tread of the foot as the Royal Wilton. J. R. Harrington has secured patents for placing a layer of cotton batting between two sheets of paper, and has disposed of his interest in the manufacture of the article to the New York Carpet Lining Co., No. 448 Water street, New York. Having tested the article we can speak well of it.

W. L. P., of N. Y.—Your collision-preventer will be noticed in another part of our paper. It is a bran new idea. It is amusing in theory, but totally impracticable.

LACONIC—Upon the 19th of May, 1790, the memorable dark day, a lady wrote to Dr. Byles as follows:—"Dear Doctor, how do you account for this darkness?" He replied, "Dear Madam, I am as much in the dark as you are."

E. J. S., of N. Y.—We are well aware of the extraordinary luminous effect produced by Hick's cap for gas burners, but cannot satisfy ourselves as to the cause of its superior results.

C. C., of Boston.—A good white varnish, suitable for maps, &c., on paper, is prepared thus:—Gum sandarac, 8 ounces; mastic, 2 ounces; Canada balsam, 4 ounces; alcohol, 1 quart. Dissolve in a gentle heat, or in a water bath. In a few days decant the clear. The maps, &c., should have a coat or two of size made from isinglass, or cuttings of parchment.

INQUIRER, of N. Y.—You are perfectly correct in saying that if you raise a pendulum from its state of rest and let it fall, it will continue to move forever, if the resistance of the air and friction be removed. The reply of the editor of the *Mercury* does not touch the point, although it is a matter of no account, since the subject is one void of any practical results.

G. B. & Co., of Ohio.—You will find a small chuck illustrated and described on page 340, Vol. XII, SCI. AM. It will answer your purpose, we think, for centering small rods. Address Wm. Stephens, Richmond, Ind.

PEDDLER—You must conform to the laws of the States in which you wish to sell your wares. Most States grant licenses to peddlers for a consideration. The fact of your commodity being a patented article does not protect you in violating the laws of the State.

H. D. F., of Mass.—By arranging the conducting wire of a submarine cable in the form of a helix, you will increase the induction and resistance—the greatest evils connected with ocean telegraphing. This fact you will do well to bear in mind.

A BUSINESS SUGGESTION—A correspondent, writing from the good city of Boston, wonders why inventors and patentees whose machines are illustrated in the SCIENTIFIC AMERICAN do not take pains to have the prices of their machines stated. Many persons, he thinks, who see an article they would like, let it sleep entirely, because they have no idea of the cost. He says English advertisements always state prices, and that there are advantages in it. We agree with our correspondent's suggestion, and shall be glad to perform our part of this service. We have suggested it

© 1858 SCIENTIFIC AMERICAN, INC.

before, but most inventors and manufacturers do not seem to be willing to expose to rival concerns their list of prices. This hinders the suggestion from being carried out.

IRON GIRDERS—We shall commence to publish, in our next number, some valuable information upon this subject, from a practical man.

J. C. F., of Ohio.—The law says, "that every person or corporation who has, or shall have purchased or constructed any newly-invented machine, manufacture, or composition of matter prior to the application by the inventor or discoverer for a patent, shall be held to possess the right to use, and vend to others to be used, the specific machine, manufacture, or composition of matter so made or purchased, without liability to the inventor, or any interested in said invention." Mark the language of the statute, "prior to the application for the patent," and you will be able to see at once the rights of the patentee and the user of his invention.

MUSTARD—It has long been an evil that our mustard, which is so good with roast beef, or beneficial as a plaster, and curative as an emetic has been largely adulterated with yellow ocher, turmeric, and other injurious substance; but these are so easy of detection that the practice is gradually being abandoned. The English mustard has always been considered the purest and best; but that manufactured by S. D. McCullough, of Lexington, Ky., quite equals it in every respect.

A. W., of N. Y.—The velocity of a stream of water discharged through a 10-inch pipe four miles long, and with a fall of four feet to the mile, will be equal to 1·477 feet per second, and the pipe will discharge in each second ·80 cubic feet of water. If there was no friction between the water and inner sides of the tube, the velocity of the water would be equal to 32·09 feet per second, and the pipe would discharge 17·5 cubic feet of water per second.

G. S. B., of Ohio—We have a good opinion of Moore's blind rod and wiring machine. We do not know of any better machine for this purpose.

TATTOOED SKIN—Our valued friend and contributor, Septimus Piesse, of London, informs us that the marks or devices which some young people, and sailor boys in particular, make on the skin by pricking it with needles, and then rubbing the punctures with indian ink, vermilion, and indigo gunpowder, are so firmly fixed that to remove them severe means must be resorted to. The following treatment will be found efficacious:—Blister the part with a plaster a little larger than the mark or "ornament," then keep the place open with a green ointment for a week; finally, dress it to get well. As the new skin grows, the old tattoos will disappear.

C. B. T., of St. Catherine's, Canada West, wishes us to ask some of our readers to send him by mail No. 1, Vol. XI., SCI. AM. He hints that some one may possibly not care so much for this No. as himself. We hope he may be accommodated.

PIESSE'S TWIN ROSE SCENT is made as follows:—Rose pomade made by maceration and enfleurage, eight pounds; spirit (60 over proof), one gallon; French otto of rose, 1½ ounce. Let the spirit stand on the pomade for a month, then strain it off and add the otto. Mix at a summer heat; in the course of a quarter of an hour the whole of the otto is dissolved, and is then ready for bottling and sale. In the winter season, beautiful crystals of the otto (if it is good) appear disseminated through the spirit. It requires twice the quantity of Turkish otto to crystallize at the same temperature.

E. F. P., of Ohio.—We noticed the article to which you refer. It would neither suit our columns nor our readers. When we write for intelligent readers we prefer to keep as near as possible to the earth.

H. G., of Brooklyn—Your remarks upon the cable will be considered in due time, and if we think the subject one likely to interest our readers, we will publish them.

J. C., of Ind.—You must be your own judge as to what agent you will employ to manage your case. We know nothing of the standing of the party you name. Never saw nor heard of an inventor whose claims were prepared by this agent.

---

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, October 16, 1858:—

W. L. C., of N. Y., $55; N. B. P., of Conn., $25; N. W., of Ala., $25; J. R., of N. Y., $30; J. B. D., of N. Y., $60; W. J. A., of ——, $20; G. & C., of Tenn., $60; F. L. K., of L. I., $30; W. H. C., of Mass., $25; J. S., of Ind., $30; J. B., of Wash. Ter., $30; M. & F., of Mass., $25; J. G., of Ga., $30; J. L. F., of Texas, $50; P, H. F., of N. Y., $32; J. S. R., of Conn., $25; H. H., of Iowa, $30; A. H. B., of Ga., $30; P. W. G., of Ill., $10; D. W. C., of N. Y., $25; H. K., of R. I., $30; H. & K., of Ill., $25: B. F. S., of Pa., $30; F. D., of Ohio, $25; J. B., of Ill., $30; M. & P., of Ind., $30; T. R., of N. Y., $10; J. R. H., of N. Y., $12; N. P., of Pa., $30; E. A. J., of N. Y., $22; W. W. H., of Ohio, $12; J. H. F., of Vt., $25: S. E., of Pa., $25; J. C. H., of Miss., $30; G. L. J., of R. I., $30; E. A. P., of Mich., $30; J. C. Jr., of N. H., $30; S. R., of Cal., $40; D. E. B., of Ohio, $30; A. K., of N, Y., $30; A. A., of N. Y., $20; W. D., of N. J., $15; J. H. S., of Conn., $30; J. S., of Iowa, $10; F. & I., of N. J., $35; G. W. F., of Mass., $30; H. H. P., of N. Y., $25; B. & R., of Pa., $30; F. F. W., of Texas, $30; S. S. S., of N. Y., $25; E. M. W., of Pa., $30; J. B. A., of N. Y., $60.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, October 16, 1858:—

J. H. F., of Vt.; N. B. P., of Conn.; E. A. J., of N. Y.; S. E., of Pa.; B. F. S., of Pa.; W. H. C., of Mass.; E. W., of Mass.; W. D., of N. J.; J. S., of Iowa; N. W., of Ala; J. R. & H. M. B., of N. Y.; D. W. C., of N. Y.; S. S. S., of N. Y.; F. D., of Ohio; J. R. H., of N. Y.; D. E. B., of Ohio; J. S. R., of Conn.; J. W. V., of Mo.; P. H. F., of N. Y.; W. L. C., of N. Y.; H. & K., of Ill.; A. A., of N. Y.; M. & F., of Mass.; G. L D., of Va.

## A CARD TO INVENTORS AND PATENTEES.

INVENTORS who have made improvements upon which they desire to procure Letters Patent, will do well to bear in mind that the Proprietors of the SCIENTIFIC AMERICAN have had upwards of thirteen years' experience in the examination of inventions, and during this time have unquestionably had more cases brought under their immediate notice than any other Patent Agency in the United States. It would be absurd to suppose that this extended experience did not afford them unparalleled facilities for the rapid and successful prosecution of this department of professional business. Messrs. Munn & Co. have made *thousands* of personal examinations at the United States Patent Office into novelty of inventions, and are familiar with the law, the rules and the regulations that govern the examination of cases, and are having daily intercourse with the Honorable Commissioner of Patents and the Examiners. Messrs. Munn & Co. have, during the last few years, successfully prosecuted hundreds of rejected cases, not for their own clients merely, but for agents of limited experience, whose offices are remote from that great storehouse of American genius, the United States Patent Office. They venture the assertion that, possessing such advantages and facilities as they do, no other Patent Agency in the United States can offer equal inducements to the worthy inventors of this country. In proof of the unparalleled amount of business transacted through the Scientific American Patent Agency, it is only necessary to refer to the letter of the Hon. Charles Mason, the late respected Commissioner of Patents, published below, and to the still more significant fact that nearly ONE THOUSAND PATENTS were issued, during the past year, to inventors whose cases were prepared and prosecuted through the Scientific American Patent Office.

Notwithstanding the multiplicity of Patent Agents in the United States, the business of Messrs. Munn & Co. is steadily on the increase. At no former period has their professional practice been so extensive as at present, which fact indicates that inventors throughout the country have the most perfect confidence in their integrity and mode of transacting this class of business. Their experience covers the most remarkable years of inventive progress; their knowledge could not be purchased by money, any more than an abstruse science could be acquired without laborious study and many experiments. They have facilities within their power by which the entire business of the United States Patent Office could be successfully carried on through their Agency *alone*. If cases are rejected, they are rigorously investigated. Appeals, interferences, and extensions are also conducted with the greatest care. In fact, every department of the business connected with the Patent Office receives their attention.

If an inventor wishes to procure patents in Great Britain, France, Belgium, Austria, Russia, Prussia, Spain, Holland or any other foreign country where patent laws exist, Messrs. Munn & Co., through their old established agencies in London, Paris and Brussels, can attend to it with great dispatch, and will, upon application, furnish all needful information, either in person at their offices in New York and Washington, or by letter. Inventors should remember that Munn & Co.'s office in Washington is not a *mere* "Agency," in which inventions are exposed to the view of *outside* parties, but it is a Branch Establishment, managed by Messrs. Munn & Co., and their confidential clerks.

Messrs. Munn & Co. wish it to be distinctly understood that they *neither buy nor sell* patents. They regard it as inconsistent with a proper management of the interests and claims of inventors, to participate in the least apparent speculation in the rights of patentees. They would also advise patentees to be extremely cautious into whose hands they entrust the power to dispose of their inventions. Nearly fourteen years' observation has convinced M. & Co. that the selling of patents cannot be conducted by the same parties who solicit them for others, without causing distrust.

Inventors who wish to personally consult with Messrs. Munn & Co. can freely do so, and receive promptly all needful advice, free of charge, and their letters will be treated as confidential.

PRINCIPAL OFFICE—128 Fulton street, New York City.

BRANCH OFFICE—Corner of F and Seventh street, Washington, D. C., opposite the United States Patent Office.

FOREIGN OFFICES—London, 66 Chancery Lane.
" " Paris, 29 Boulevard St. Martin.
" " Brussels, 26 Rue des Eperonniers.

---

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents:—

MESSRS. MUNN & CO.—I take pleasure in stating that while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly, CHAS. MASON.

Communications and remittances should be addressed to MUNN & COMPANY,
No. 128 Fulton street, New York.

## A WORD TO OUR PATRONS.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a *bona fide* acknowledgment of the receipt of their funds. The Post Office law does not allow publishers to enclose receipts in the paper.

BACK NUMBERS.—It has been our custom in years past to send the back numbers of our paper to all who subscribe during the first quarter of the volume. This system has given satisfaction heretofore, and we shall continue it on this volume, unless the party subscribing orders to the contrary when he remits. Those who do no not care for the back numbers, to render their volumes complete, can have their subscriptions commence at the time of remitting by signifying such a desire.

## TERMS OF ADVERTISING.

Twenty-five cents per line each insertion. We respectfully request that our patrons will make their advertisements as short as possible. Engravings cannot be admitted into the advertising columns.

*** All advertisements must be paid for before inserting.


**RIGHTS OF ROOT'S PATENT WINDOW** FASTENER for sale—Address IRVING ROOT, Austin, Texas. 1*

**AGENTS WANTED FOR BELL'S "CARPENTERY MADE EASY"**—The most valuable and practical book for carpenters extant; 38 plates, 200 figures. Price $2. A sample copy will be sent postpaid for $2, and a more liberal discount if ordered by express. JAMES CHALLEN & SON, 1* Philadelphia, Pa.

**PAINTER, GILDER AND VARNISHER'S** COMPANION—Seventh Edition just ready, containing rules and regulations for everything relating to the arts of Painting, Gilding, Varnishing and Glass-staining, numerous useful and valuable receipts, tests for the detection of adulterations in oils, colors, &c., and a statement of the diseases and accidents to which painters are liable, with the simplest methods of prevention and remedy. 12 mo. Price, 75 cents. Sent by mail free of postage. HENRY CAREY BAIRD, 7 3 Philadelphia, Pa.

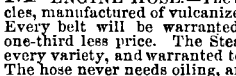
**AN OFFER WORTHY OF ATTENTION**—The advertiser has an invention relating to the running gear of railroad cars, and which is considered to be new and useful. The inventor will assign half of said invention to a responsible business man (no other need apply) who will patent the same, and bring it to the notice of the public through the agency of Munn & Co., of New York City. Address Box 87, Brooklyn, L. I. Satisfactory references given and required. 1*

**10,000 AGENTS WANTED**—TO SELL the "Portfolio Savings Bank," the prettiest little arrangement for carrying money in ever invented. They are sold at such low prices that everybody can make large profits. Samples will be sent free of postage on receipt of twelve cents in stamps. Address DR. M. LAFAYETTE BYRN, 1* Box 4,669, Post-office, New York.

**E. HARRY SMITH,** DESIGNER AND MECHANICIAN, No. 23 Chambers street, New York. 7 4* eow

"They are without a rival."—Scientific American.

**WHEELER & WILSON'S SEWING MACHINES**—New Style, price $50. Office, No. 343 Broadway, New York. Diagram of the Lock Stitch



made by this Machine. This is the only stitch that cannot be raveled, and that presents the same appearance upon each side of the seam. It is made with two threads, one upon each side of the fabric, and interlocked in the center of it. Send for a circular. 6 tf

**PIERS, WHARVES, SEA WALLS, &c.**—Patent Right for Sale.—I have obtained a patent for my invention to construct piers, wharves, sea walls, and other masonry under water, without the aid of coffer dams. Depth of water or strength of current no obstacle. It is particularly well-adapted to turn old piers or wharves into solid masonry, and permanence and cheapness are combined. I offer it for sale in State, County, or rights for single jobs. WILLIAM H. HORSTMANN, 6 4* No. 13 South William st., New York.

**ELLIS & MATHIS**—COMMISSION AGENTS for the sale of patent rights and patented articles, Columbus, Ga. Refer to Messrs. Johnson & Hamilton, New York. Carhart, Bro. & Co., New York. Catlin, Leavitt & Co., New York. Wood & Low, New Orleans. Hardaway & Gray, St. Louis. Sayre & White, Cincinnati. 6 2*

**A NEW ROPE MACHINE**—PATENTED August 24, 1858, by Newton Adams, of Lansingburgh, N. Y. This machine will lay rope from both ends, thereby producing nearly twice the quantity produced by any other machine that has yet been patented. The machine can be seen at the factory of NEWTON ADAMS, Lansingburgh, in full operation, at any time. State rights for sale. 6 2*

**$50. PATENT CARPENTERS' GAGE**—State rights for sale very low. This invention has no rival. Address Box 87, Brooklyn, N. Y. 6 3*

**GREAT CURIOSITY**—FULL PARTICULARS free—Agents wanted. SHAW & CLARK, 5 4* Biddeford, Me.

**WOODWORTH PLANING MACHINES**—Sash, Tenoning and Mortising Machines, Steam Engines, Slide Lathes, Drills, &c., at greatly reduced prices. Address CHARLES H. SMITH, 135 North Third st., Philadelphia. 3 6*

**STEAM ENGINES, SLIDE LATHES,** Planing Machines, Drills, &c.—Orders taken for all descriptions of machines for working in wood or iron. Address CHARLES H. SMITH, Machinery Depot, 135 North Third st., Philadelphia. 3 6*

**RIGHTS FOR SALE**—SMITH'S PATENT Feet-Warming Device, for blacksmith's use. New, useful, and just in season. Patented August 31, 1858. State rights, or the whole of the United States for sale low. Address GEORGE W. SMITH, Aurora, Dearborn co., Ind. 3 5*

**PICKPOCKETS FOILED**—A NEW THING—Sells rapidly. Send stamp for agency. DICKINSON & BATE, Hudson, Mich. 4 4*

**SECOND-HAND MACHINERY AT VERY** low prices for cash.—Steam Engines, Slide Lathes, Planing Machines, Drills, Slotting Machines, &c.; also, a variety of Mortising, Tenoning, and Sash Machines, &c., all warranted in good running order. Address CHARLES G. WILLCOX, 87 North Third st., Philadelphia, Pa. 3 6*

**EVERY MILLWRIGHT, ALL MILL-**OWNERS, and those interested in hydrodynamics, should become acquainted with the merits and principles of the improved Fourneyron Turbine Water Wheel, or the "Universal Turbine," a wheel the most economical in the use of water, and giving the highest percentage, with a partially raised gate, of any yet discovered. It gives from 75 to 97 per cent of power, according to the size of wheel and head employed. For information address S. K. BALDWIN, Laconia, N. H.

N. B.—For low falls of one, two, or three feet, also for any fall, it will surpass all others. 2 13*

**WARTH'S SELF-ACTING WOOD-TURN-**ING LATHES.—The best and most practical now in use; one boy will accomplish the work of four men. State and County rights for sale. Address A. WARTH, care W. H. Bertling, 23 Chambers st., New York, or the manufacturers, who have machines of all sizes on hand. Also a general assortment of machinists tools. Circulars sent. Address CARPENTER & PLASS, 479 First ave., New York. 2 13*

**HARRISON'S GRIST MILLS**—20, 30, 36 AND 48 inches diameter, at $100, $200, $300 and $400, with all the modern improvements. Also, Portable and Stationary Steam Engines of all sizes, suitable for said Mills. Also, Bolters, Elevators, Belting, &c., &c. Apply to S. C. HILLS, 12 Platt st., New York. 1 e3w

**FIFTH EDITION**—CATALOGUE CONTAINing 250 illustrations of Mathematical, Optical and Philosophical Instruments, with attachment of a large sheet representing the Swiss instruments in their actual size and shape, will be delivered, on application, to all parts of the United States, by sending 12 cents in postage stamps. C. T. AMSLER, 1 5eow* No. 635 Chestnut st., Philadelphia.

**IMPROVED WOODWORTH AND DAN-**IELS' PLANING MACHINES, with Read's feed works, and Gibbs' patent oval hollow arm, made by J. A. FAY & CO., Worcester, Mass. 2 3*eow

**OIL! OIL! OIL!**—FOR RAILROADS, STEAMERS, and for machinery and burning. Pease's Improved Machinery and Burning Oil will save fifty per cent., and will not gum. This oil possesses qualities vitally essential for lubricating and burning, and found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior and cheaper than any other, and the only oil that is in all cases reliable and will not gum. The Scientific American, after several tests, pronounced it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer, F. S. PEASE, 61 Main st., Buffalo, N. Y.

N. B.—Reliable orders filled for any part of the United States and Europe. 1 13

**THE WORKS OF THE AUBIN GAS CO.,** (General Office, No. 44 State st., Albany, N. Y.,) as now perfected, are adapted to all materials and localities, and are in successful operation in villages, factories, and private dwellings. For full information as to cost, probable income of public works, &c., apply as above. For plans, &c., see SCIENTIFIC AMERICAN of March 13th. 1 26

**STEAM ENGINES, STEAM BOILERS,** Steam Pumps, Saw and Grist Mills, Marble Mills, Rice Mills, Quartz Mills for gold quartz, Sugar Mills, Water Wheels, Shafting and Pulleys. The largest assortment of the above in the country, kept constantly on hand by WM. BURDON, 102 Front street, Brooklyn, N. Y. 1 26

**HARRISON'S 20 AND 30 INCH GRAIN** Mills constantly on hand. Address New Haven Manufacturing Co., New Haven, Conn. 1 13

**MACHINE BELTING, STEAM PACKING,** ENGINE HOSE.—The superiority of these articles, manufactured of vulcanized rubber, is established. Every belt will be warranted superior to leather, at one-third less price. The Steam Packing is made in every variety, and warranted to stand 300 degs. of heat. The hose never needs oiling, and is warranted to stand any required pressure; together with all varieties of rubber adapted to mechanical purposes. Directions, prices, &c., can be obtained by mail or otherwise, at our warehouse. NEW YORK BELTING AND PACKING COMPANY. JOHN H. CHEEVER, Treasurer, No. 6 Dey street, New York. 1 13

**VAIL'S SPEEDWELL IRON WORKS,** Morristown, N. J., manufacture Craig's Patent Double-acting Balance Valve Oscillating Steam Engines both stationary and portable, Knowles' Patent Muley, Portable, Gang and Re-sawing Mills, Sugar and Chinese Cane Mills and Sugar Pans, Grist Mills, Mill Irons, Rich's Water-wheels, Forgings and Castings. Orders for the above, and all descriptions of labor-saving machinery will receive prompt attention. JOHN H. LIDGERWOOD & CO., 1 12* No. 9 Gold street, New York.

**WROUGHT IRON PIPE, CAST IRON** PIPE, Galvanized Iron Pipe (a substitute for lead), Stop Cocks and Valves, Boilers and Boiler Flues. Pumps of all kinds sold at the lowest market rates by JAMES O. MORSE & CO., 76 John st., and 29, 31 and 33 Platt st., New York. 1 8*

**SECOND-HAND MACHINISTS' TOOLS—** Viz., Engine and Hand Lathes, Iron Planers, Drills, Chuck Lathe, Gear Cutter and Vises, all in good order, and for sale low for cash. Also one new first-class Woodworth Planing and Matching Machine. Address FRANKLIN SKINNER, Agent, 14 Whitney avenue, New Haven, Conn. 1 13

**CARY'S CELEBRATED DIRECT ACTING** Self-Adjusting Rotary Force Pump, unequalled in the world for the purpose of raising and forcing water, or any other fluid. Manufactured and sold by CARY & BRAINARD, Brockport, N. Y.

Also for sale by J. C. CARY, 240 Broadway, New York City. 1 11*

**PECK'S PATENT DROP PRESS**—ALL sizes, used for stamping copper or tin wore, silver ware ornaments, spoons, &c., and for forging gun work, lock work, carriage clips, &c. Also power and foot punching presses, and oval die chucks. Manufactured by MILO PECK & CO., 3 Whitney avenue, New Haven, Conn. 1 14*

**IRON AND COMPOSITION CASTINGS,** Chilled Rolls, Mill Gearing, Fan Blowers, Trip Hammers, Shafting, Shears, Presses, India Rubber Calenders, Grinding and Cutting Machines, Turbine and Center-vent Water Wheels, also contracts made for Breast and Overshot Wood Wheels, also orders taken for the manufacture of patented machinery of all kinds, by the BIRMINGHAM IRON FOUNDRY, Birmingham, Conn. 1 tf SHELDON BASSETT, President.

**J. & WM. W. CUMBERLAND'S IMPROVED** Patent Metallic Oil, for machinery and burning. Warranted to last longer than sperm oil. Manufactured only by the New York Cumberland Metallic Oil Works, foot of East 24th st. Office, No. 205 Broadway, New York. Under the inventor's superintendence. N. B.—See that our brand "New York Cumberland Metallic Oil Works, foot of East 24th street," is upon every package, however small. 1 10*

**GUILD & GARRISON'S STEAM PUMPS** for all kinds of independent steam pumping, for sale at 55 and 57 First street, Williamsburgh, L. I., and 301 Pearl street, New York. 1 10* GUILD, GARRISON & CO.

**WELLINGTON MILLS EMERY**—CONsumers will look for copyright label on each cask, by whomsoever sold, and they will be sure of the best emery. Casks contain 200 pounds each. Testimonials of its superiority from Collins' Axe Co., and many others. GEO. H. GRAY & DANFORTH, 1 9* Boston, Mass.

**IRON PLANERS AND ENGINE LATHES** of all sizes, also Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address "New Haven Manufacturing Co., New Haven, Conn." 1 13

**WOODWORTH PLANERS**—IRON FRAMES to plane 18 to 24 inches wide—at $90 to $110. For sale by S. C. HILLS, 12 Platt street New York. 1 26

**MACKINTOSH & WADSWORTH'S PAT-**ent Variable Governor Cut-off Valve, equally adapted to the common slide valve or puppet valve engines, as to the oscillating; cutting off the steam at any point, from the commencement to three-fourths of the stroke, as the varying pressure of the steam in the boiler, or the varying amount of work to be done, requires. Shop, county and State rights for sale. For illustration see SCI. AM. Vol. XIII, No. 51. For full particulars address CRIDGE, WADSWORTH & CO., Pittsburgh, Pa. 3 tf

**WOODBURY'S IMPROVED WOODWORTH** Planing, Tonguing and Grooving Machines, are warranted to be vastly superior to any other machines in this country. When exhibited, they have always received the highest premium. Two gold medals have been awarded. Six patents have been granted to secure the improvements on these machines.

All sizes constantly for sale, by JAMES A. WOODBURY, 69 Sudbury street, Boston. 1 8*


© 1858 SCIENTIFIC AMERICAN, INC.

# Science and Art.

### Allen's Washing Machine.

The washing machine is daily becoming a more distinct feature of our country's inventions, and no sooner has one invention seemed to bar up all further improvement than another is invented which as far surpasses its predecessor as that did its forerunner. The portable and convenient machine which forms the subject of our illustrations is an example of this progress of invention, as will be seen from our description.

Fig. 1 is a perspective view of the washing machine, and Fig. 2 a view of the washing board and bottom of the tub.

A is an ordinary washing tub secured to a stool or stand, C, which raises it the required hight from the ground, to be used without causing the person washing, to assume any unnatural or unhealthy position. The bottom of the tub, F, is covered with a series of semi-circular pieces, *a*, arranged as shown in

*Fig. 1*

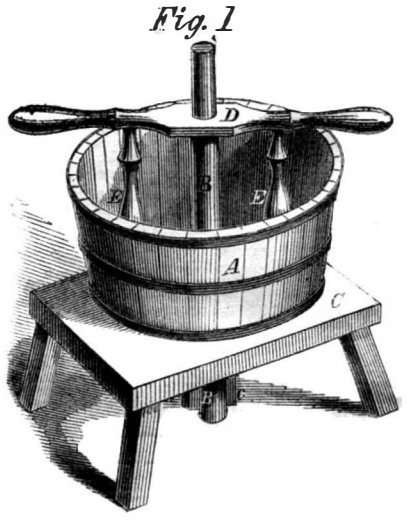
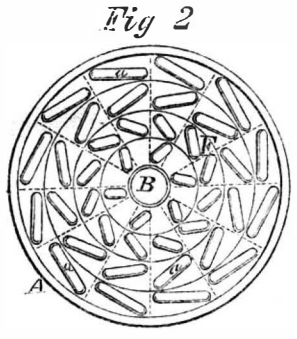



Fig. 2, their ends are rounded, and they form artificial knuckles upon which the clothes are rubbed by a plate provided with similar pieces only arranged in the reverse position, thus ensuring the perfect rubbing of all parts of the fabric between them, and consequently its thorough cleansing from all dirt and impurities. The bottom of the tub has a shaft, B, passed through its center, and this also passing through the stool, C, enables the tub to be secured to the stand by a small wedge, *c*, passing through it underneath the stand.

*Fig 2*




The rubber is attached by two arms, E, to the crosspiece and handles, D, and the clothes being placed in the tub with the necessary quantity of soap and water, the rubber and handles are slid over the shaft or central piece, and the proper motion being given the rubber by the operator, the clothes will be quickly and thoroughly washed.

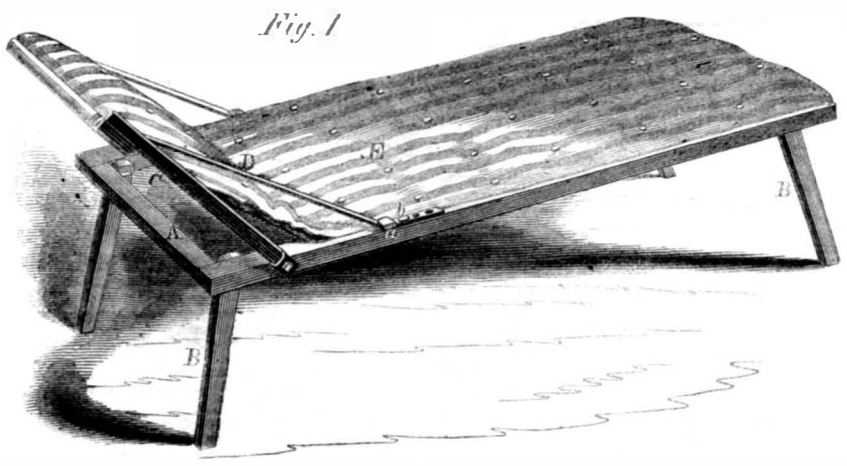
This compact and neat machine is the invention of the Rev. John Allen, of Galena, Md., who patented it Sept. 14, 1858. The inventor, or Edwin Allen, 408 Broad street, Newark, N. J., may be addressed for further information.

### Transparent Enamel Photographs.

A novel and elegant adaptation of the photographic art has recently been brought out in London, and termed transparent enamel photographs. Transparency is attained by fixing sheets of enamel upon glass surfaces, the two forming one plate. Upon one enamel face the picture is taken, the surface having been rendered sensitive by the ordinary process. Then, when inverted, the glass becomes a ready-made protection for the pictures on one side, and another sheet of glass may be placed at the back or not at pleasure. The enamel surface will also take water colors, and when thus painted, the effect is scarcely inferior to that of ivory. These colors are afterwards fixed by a peculiar process. The advantages thus secured are transparency, capability of being perfectly cleansed, and, as it is confidently stated, durability of colors. The purity and delicacy of the result may be well imagined, and will doubtless bring the discovery into use for ornamental windows, lamp-shades, and all other transparencies.

## FAVOR'S INVALID CHAIR AND BED.

*Fig. 1*



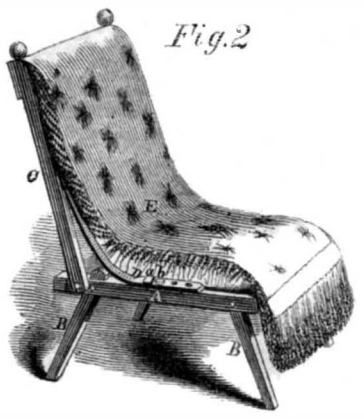

Among "the ills which flesh is heir to," there are very many, the radical cure of which is only to be effected by rest. The poet has called it "Nature's sweet restorer," and sleep, the acme of all rest, Shakespeare has defined as "Nature's soft nurse." So we have poetic as well as medical authority for making the assertion. When in a state of health a man can sleep anywhere and on anything, if tired; some can even fall into the "arms of Morpheus" leaning against a tree, and others court the "drowsy god" under the benign shade of a stone wall. But when sickness has wasted the "human form divine," and weak inanition preys upon the mind and body of a poor sufferer, some truly comfortable and simple device must be had recourse to, in order that a change of position may be easily effected without disturbing the patient. This device should be cheap, portable, and simple, and such a one is found in the subject of our engravings.

Fig. 1 represents an invalid bed, which is also suitable for the camp or the emigrant. A rectangular frame, A, is supported by four short but strong legs, B, which are secured to A by a pin, and they can be folded inside, or kept firmly in the position shown by a small catch. The head-board, C, is pivoted to the frame, and the sacking or mattress, E, is attached to its top rail, so that the elevation of the head-board forms a pillow of any hight, thus raising the body to that angle at which the person can secure the most rest, or at which the greatest comfort is obtained.

The proper angle of the head-board is arranged by having it supported by two straps or cords, D, attached to its upper end, one on each side. The other end of these cords or straps has a metal strip secured to it, and this strip is perforated by a number of holes, which, passing over a stud, *b*, in the frame, A, hold the head-board in any desired position. The strap passes also through a guide, *a*, to hold it in the proper line. The sacking can be attached by ropes and slats, or by ropes alone, or nailed to the frame, as may be most convenient, and it forms one of the best invalid couches which we have ever seen.

The chair, which can also be made into a couch, and is for the invalid a truly *easy* chair, is represented in Fig. 2; and it will be seen at a glance that its construction is essentially the same as the couch, the back, C, being placed instead of a head-board, and the cushion, E, replacing the mattress. There is one use to which we think these couches and beds are especially adapted, and that is for

*Fig. 2*




the country surgeon or druggist; they take up so little room, and are so easily and quickly fixed, that they are the very thing for accidental sufferers who may chance to be brought in, and require an operation or amputation before they can be removed with safety; but everywhere and anywhere they will be found convenient and comfortable, and, as we before remarked, cheap.

They were patented April 20, 1858, by Z. C. Favor, of Chicago, Ill. Any further information can be obtained from the agent, E. H. Brown, of the same city.

### Pickled Beet Root, Spiced Vinegar, &c.

There are several species of beet root, which are used for different purposes. The white Sicilian beet, from yielding most saccharine matter, is, according to Burnett, chiefly cultivated in France for the manufacture of sugar and spirit. Another kind of beet is grown extensively by farmers, called "mangel wurzel," which translated means "famine's root," but which should more properly have a name indicative of plenty, for many of the roots weigh twenty, thirty, and even sixty pounds each. But we have to speak of the red beet, the *beta vulgaris rubra* of the botanists; and the only thing we could desire respecting this plant is, that it might in reality be what the botanists term it, *vulgaris*, or common, for a more nutritious esculent could scarcely be found when properly cooked, that is, boiled from one and a-half to two and a-half hours, according to its size. To pickle beet roots, boil them till three parts done, then, when cold, peel them and cut them into thin slices; put the cut slices into a jar, and pour on them hot spiced vinegar, sufficient to cover the whole. After they have stood a month ask us to come and take bread and cheese with you; put the pickled beet on the table, and there will then be a supper "fit for a king."

For every pint of spiced vinegar it is intended to make, take one ounce of black pepper, half an ounce of salt, half an ounce o ginger, a quarter of an ounce of allspice, and if desired to be hot, add also a quarter of a drachm of Cayenne, or a few capsicums. Bruise the whole of these materials in a mortar, and put them into a jar, or wide-mouthed green glass bottle, tied over with a bladder. Place this in a saucepan of water, and keep it hot for three or four days, shaking it now and then. If the maker has an enamel saucepan, this operation can be faciliated by simmering the ingredients together. Spiced vinegar is used hot for walnuts and cold for cabbage.

SEPTIMUS PIESSE.

TO KEEP THE HANDS WHITE AND SOFT.—In order to preserve the hands soft and white, they should always be washed in warm water, with fine soap, and carefully dried with a moderately coarse towel, being well rubbed every time to ensure a brisk circulation, than which nothing can be more effectual in promoting a transparent and soft surface. If engaged in any accidental pursuit which may hurt the color of the hands, or if they have been exposed to the sun, a little lemon juice will restore their whiteness for the time. Almond paste is of essential service in preserving the delicacy of the hands. It is made thus:—Beat up four ounces of bitter almonds, add to them three ounces of lemon juice, three ounces of almond oil, and a little weak spirit of wine and ether. The following is a servicable pomade for rubbing the hands on retiring to rest:—Take two ounces of sweet almonds; beat with three drachms of white wax, and three drachms of spermaceti, put up carefully in rose water. Gloves should be always worn by ladies on exposure to the atmosphere.

MECHANICS

INVENTORS, MILLWRIGHTS. FARMERS, AND MANUFACTURERS.

FOURTEENTH YEAR!

PROSPECTUS OF THE

SCIENTIFIC AMERICAN.

This valuable and widely circulated journal entered upon its FOURTEENTH YEAR on the 11th of September.

It is an Illustrated Periodical, devoted to the promulgation of information relating to the various MECHANICAL and CHEMICAL ARTS, MANUFACTURES, AGRICULTURE, PATENTS, INVENTIONS, ENGINEERING, MILL WORK, and all interests which the light of PRACTICAL SCIENCE is calculated to advance.

All the most valuable patented discoveries are delineated and described in its issues, so that, as respects inventions, it may be justly regarded as an *Illustrated Repertory*, where the inventor may learn what has been done before him in the same field which he is exploring, and where he may publish to the world a knowledge of his own achievements.

Reports of American Patents granted are also published every week, including *official* copies of all the PATENT CLAIMS. These Patent Claims are furnished from the Patent Office Records expressly for this paper, and published in the SCIENTIFIC AMERICAN *in advance of all other publications.*

Mechanics, Inventors, Engineers, Chemists, Manufacturers, Agriculturists, and people in every profession of life, will find the SCIENTIFIC AMERICAN to be of great value in their respective callings. Its counsels and suggestions will save them hundreds of dollars annually, besides affording them a continual source of knowledge, the value of which is beyond pecuniary estimate.

TERMS OF SUBSCRIPTION—Two Dollars a Year, or One Dollar for Six Months.

CLUB RATES.

Five Copies, for Six Months.....$4
Ten Copies, for Six Months.....$8
Ten Copies, for Twelve Months.....$15
Fifteen Copies, for Twelve Months.....$22
Twenty Copies, for Twelve Months.....$28

For all clubs of Twenty and over, the yearly subscription is only $1 40. Names can be sent in at different times and from different Post Offices. Specimen copies will be sent gratis to any part of the country.

Southern, Western and Canadian money or Post Office stamps, taken at par for subscriptions. Canadian subscribers will please to remit twenty-six cents extra on each year's subscription, to pre-pay postage.

MUNN & CO., Publishers and Patent Agents,
No. 128 Fulton street, New York.

© 1858 SCIENTIFIC AMERICAN, INC.